Appendix D Soil Boring Logs

611 Broadway Suite 907 G New York, New York 10012

Geologic Boring Log

Final Retention Basin SWMU 14

								Final Retention Basin SWMU 14				
oring ID	'n	Client:			Project:			Location				
FRE	3-1	Puerto R			RCRA Facilit	y Investigation		Yabucoa, Puerto Rico				
roject No		AMAI Ge	logist/Eng	incer	Driller			Drilling Contractor				
		Gustavo	Felipe		Constancio O			Jaca & Sierra				
ate Start	ed	Date Com	pleted		Drilling Method	d		Sampler type				
/10/96		7/10/96			3.25" ID - 6.0	00" OD Hollow S	tem	2"x 24" Carbon Steel Split Spoon				
Depth		Reco-	Blow	PID			Soil Des	-				
bgl	USCS	very	Counts	(ppm)		Descriptions made i	rom auger	cuttings unless otherwise noted				
(fl.)	Symbol	(per 24")	(6" each)	· ····				oisture, color/hue etc.)				
0	GC			0.0	0-2 ft Gravel, sand	and silt, some cla	y, backfi	ll zone.				
- 1		i l			No visible contami	nation, Dry, Hue	2.5 Y 4/2	Dark grayish brown				
1							5.					
		['			<u> </u>							
2	CL							Low plasticity clay.				
- 1		1			No visible contami		t odor.					
3					Dry, Hue 2.5 Y 2.5	5/1 Black						
4	CL			0.0	4-6 ft Same as abo	ve						
				80								
5				- 14	1							
	i	i		l								
6	CL			0.0	6-8 ft Same as abo	ve						
				1								
7		1			1							
_				ا م	8-10 ft Clay dense	high placticity in	organic c	lay (micaceous)				
8	MH	▼		0.0	Groundwater stabi							
					No visible contami		attry 0.5	n og:				
9		Ì			INO VISIDIE COILLAIN	mation.						
10			i	ŀ								
10	ļ			•								
1	}											
				1	Drill to 16 ft and in	nstall temporary i	nonitorin	g point at 16 ft.				
					Screen from 6-16							
	1		1					68				
↓				1								
16					End of boring							
			1									
					Well Co	nstruction Detail	S					
Casing m	sterial	<u> </u>	Screen sl	ot size	Screen Interval	Filter Pacl	3	Cap Type				
	nedule 4	0 PVC	0.020) inch.	6-16 ft	No. 2 Sil	ica sand	Watertight				
	asing/ma		<u> </u>		Lock type:							
None					None							
Notes:			······································									
												
					Well De	evelopment Data						
Date:		Techniqu	ie:				Volume					
	3/96	Centrifi	igal pum	using 5	/8" high density pol	yethylene hose.		55 gallons				
		np (°C)		ıS/cm)	Ha	Notes: SC- spec	ific condi	uctance				
Initial:		25		480	5.95	Water clears after	developr	ment no visible contamination				
Final:	 	25	1.	600	6.01	Well dries after fo	w minute	es of pumping at 4 gpm				

611 Broadway Suite 907 G New York, New York 10012

Geologic Boring Log

Final Retention Basin SWMU 14

						10		inal Retention Basin SWMU 14
ring ID		Client:			Project:			estion
FRE		Puerto Ri			RCRA Facility Investi	gation	_	abucoa, Puerto Rico rilling Contractor
oject No		AMAI Geo	ologist/Eng	реег	Driller			_
		Gustavo I			Constancio Olivo			ca & Sierra
te Start	ed	Date Com	pleted		Drilling Method			'x 24" Carbon Steel Split Spoon
2/96		7/2/96			3.25" ID - 6.00" OD H			
epth		Reco-	Blow	PID			il Descr	
bgl	USCS	very	Counts	(ppm)	Description	ons made from	auger cut	ttings unless otherwise noted
(ft.)	Symbol	(per 24")	(6" each)	********				ture, color/hue etc.)
0	SP	(1000)	<u> </u>	0.0	0-2 ft Gravel sand and silt, I	backfill zon	e,	
ľ	51	·			Poorly graded, no visible co	ntamination	ı, Dry.	
,	,				Hue 10 YR 5/2 light brown	ish gray		
1			. 1					
_	614	l		0.0	2-4 ft Same as above little of	or no gravel	,	
2	SM	1	ļ	0.0	No visible contamination, n	o product o	dor.	
_		l .				•		
3	!			1				
	l			0.0	4-6 ft Same as above			
4	SM	l	1	0.0	4-0 It Danie to acces			
	ļ			1	ļ			
5		1	Į.	Į				
	1	1			6-11 ft Silty clay very plast	ic and mois	t.	
6	ML			0.0	Little or no sand or gravel	or rock fram	ments.	
		1				O' LOOK HIGH		
7	Ì	1	Ì		Hue 2.5 Y 4/1 Dark gray			
			1		8 ft Groundwater stabilized	t at approvi	mately 8	t.Oft bgl
8	ML	75 V		0.0		at approxi		
				1	No visible contamination.			
1	1	1		1	Hue 2.5 Y 4/1 dark gray			
		1		1	ĺ			
	1	1	1	ì				
1	1		1	1				
1	1	ì	Į.	1				
- 1	1	1					_	
	1		1	ĺ	Drill to 17 ft bgl and instal	ll temporary	monito	ring well point
	1	1	1	ł	Screen from 7-17 ft bgl.			
		1		Į.				
1								
17					End boring			
17	l	1	Į.					
					Well Constructi	on Details		
			Screen	lot rive	Screen Interval	Filter Pack		Сар Туре
Casing 1	material	40 DVC		20 inch.	7-17 ft	No. 2 Silica	a sand	Watertight
		40 PVC	0.02	o men.	Lock type:			
*	y casing/n	nanbole:			None			
None					14000			
Notes:								
					Well Develop	nent Data		
					Well Developing		Volume	anroed:
		Techni	que:				4 OVERIDE	55 gallons
Date:					5/9" blob density polyethyle	me nose. I		
	3/8/96	Centri			5/8" high density polyethyle	00	Ga ass 1	uctance
				np using (μS/cm)	pH Notes:	SC - SDeci	fic cond	uctance
	T	Centri emp (°C) 25	SC		pH Notes:	lear after de	velopm	uctance ent no visible contamination nutes pumping at 1 gpm

611 Broadway Suite 907 G New York, New York 10012

					New York, New York 10012		
					Geologic Boring Log		
					2		North Aeration Basin SWMU 17
- 180					Project:		Location
ring ID		Client:	· · · · · · · · · · · · · · ·	NII (Co	RCRA Facility Investigation		Yabucoa, Puerto Rico
	B-2		cologist/Eng		Driller		Drilling Contractor
oject No	0.)Det.	Constancio Olivo		Jaca & Sierra
		Gustavo	Felipe		Drilling Method		Sampler type
ate Start	ted	Date Com	pleteo		3.25" ID - 6.00" OD Hollow !	Stem	2"x 24" Carbon Steel Split Spoon
/2/96		7/2/96		777	3.23 10 - 0.00 02		escription
)epth		Reco-	Blow	PID	Passintions made		er cuttings unless otherwise noted
bgl	USCS		Counts	hanning occupants	Comin Siz	Little was	moisture, color/hue etc.)
(ft:)	Symbol	(per 24")	(6" each)				
0	GM		Γ '	0.0	0-2 ft Gravel, sand, silt and clay m Some large rock fragments, no visi	X, Usun.	nii zone.
			1		Some large rock tragments, no visi	He com	Immation, poorly solves
1			,		Dry, Hue 7.5 Y 4/2 Brown		
				1	l la la la chiaite	-i de	
2	CL	1		1	2-12 ft Silty clay, high plasticity,	AOISI, um	ark gray no gravel or rock fragments.
					Hue 2.5 Y 4/2 brown.		
3	1			1			
					1		
4				i	%		
•							
5					1		
_]				1		
6							
U			ļ	1			
7	1						
,							
8				ļ			
1	Į						
9		1					
1	1			1			
10					ì		
i	1			}			
11							
1.1				Ì			
12				1	12 ft - groundwater encountered,	drill to 1'	7 ft and install temporary
12			+	-	monitoring well point. Screen 12	-17 ft	
			1		III III III III III III III III III II		
1,,					End of boring		
17	1				Die Co Trong		
					Well Construction Deta	ails	
				slot size	Screen Interval Filter P	ack	Сар Туре
	material	40 PVC		20 inch.		Silica san	nd Water tight
			V	20 111	Lock type:		
	ty casing/n	panboic.			None		
None					140136		
Notes:				100			
<u> </u>					Well Development Da	ıta	
		lan shari	•				me purged:
Date:	11.2.10.6	Technic	que:	neine	g 5/8" high density polyethylene hose		55 gallons
7	7/19/96	Centri	rugai pun	ip using	, 3/8 liight density polyedry lene lies		

Notes:

Water clear after development no visible contamination

pН

6.24

6.16

SC (µS/cm)

1,950

2,300

lnitial:

Final:

Temp (°C)

25

25

611 Broadway Suite 907 G New York, New York 10012

Geologic Boring Log

South Aeration Basin SWMU 18

							Location
ring ID		Client:			Project:	igation	Yabucoa, Puerto Rico
AB		Puerto R			RCRA Facility Invest	184(10)1	Drilling Contractor
oject No).	AMAI Ge		ineer	Constancio Olivo		Јаса & Ѕіетта
		Gustavo Date Com			Drilling Method		Sampler type
te Start	ied		pieteu		3.25" ID - 6.00" OD I	Hollow Stem	2"x 24" Carbon Steel Split Spoon
2/96		7/2/96	Blow	PlD	5.25 12 0.00 02 1		Description
epth	Nece	Reco-	Counts	(ppm)	Descripti		ager cuttings unless otherwise noted
bgl	USCS Symbol	(per 24")			9.0	(grain size, sortin	g, moisture, color/hue etc.)
(ft.)	GM	(pc. 24)	(0 0.0.0)	0.0	0-2 ft - Sand silt and gravel	, backfill zone	e, abundant rock fragments
۰	GIV1		,		No visible contamination H	łue 7.5 Y 4/3 t	prown.
1					İ		
2	GM				No change in lithology from	m 2 to 8 feet.	
				l	let		
3	1	1			(1)		
4	GM						
â	1	}	1	1			
5	ļ		1				
		1	Į .	1			
6	GM	1					
_							
7	1	1		1			
0	CL	l _	1		8-10 ft Slight change to sa	ındy clay at 8 f	t. No visible contamination throughout
8	CL	├ ▼	+	┪	Groundwater at 8 ft		
9	1	l l	1	1	Hue 2.5 Y 4/2 brown		
9	1		1	1			- · · · · · · · · · · · · · · · · · · ·
10		1		1	Groundwater stabilized at	approximately	8 ft. Drill to 13 ft installed a 2"
	İ	1		1	temporary monitoring point	nt at 13 ft bgl.	
11	1	ļ		1	Screened interval 8-13 ft		
	1		1	1			
12	1	l l					
	1		1	Į.			
13	1			1	End of boring		
					1		
14	1						
					Well Construct	ion Details	3
			10	lan In	Screen Interval	Filter Pack	Cap Type
	material	40 DV.C	Screen s		8-13 ft	No. 2 Silica s	
	chedule		0.0.	20 inch	Lock type:	1	
	casing/m	anhole:			None _		
None			6.				2
Notes:						Ψ.	
			1.0		Well Develop	nent Data	
Dete		Technic	aue:		<u> </u>		lume purged:
Date:		Conti	fugal num	no using	5/8" high density polyethyle	ene hose.	55 gallons
7/	/10/04						
7/	/19/96 Te				Notes:	SC -specific (conductance
7/ Initial:	Те	emp (°C)	SC	(μS/cm) 2,220	Notes:	SC -specific (conductance ty after development no visible contamination

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New York, New York 10012

Geologic Boring Log Slop Oil Tank 103 SWMU 35 Location Project: Client: Boring ID Yabucoa, Puerto Rico RCRA Facility Investigation Puerto Rico Sun Oil Company 35-01 **Drilling Contractor** Dritler AMAI Geologist/Engineer Project No. Jaca & Sierra Constancio Olivo Gustavo Felipe Sampler type **Drilling Method** Date Completed 2"x 24" Carbon Steel Split Spoon Date Started Tripod 7/23/96 7/23/96 Soil Description PID Blow Reco-Depth Descriptions made from auger cuttings, unless otherwise noted. **USCS** very Counts (ppm) bgl (grain size, sorting, moisture, color/hue etc.) (per 6") (per 24") Symbol (ft.) 0-4" Concrete coring. 13.0 18" GM 4"-2 ft Backfill zone, large gravel and silty clay mix, poorly sorted 5-10-7-8 Well compacted spoon, Top of spoon has some hydrocarbon odor and visible stains, Dry throughout, Hue #1 for gley 5/5 GY greenish gray. 1 Full analysis and Immunoassay samples collected. Sample collected 2-4 ft - Same as above no visible contamination, 4-4-4-7 0.0 18" 2 GM Full analysis and Immunoassay samples collected. Sample collected 3 4-6 ft -Drill using drive point to 6 ft. 4 5 6-8ft Clay - high plasticity dense (micaceous) little or no sand or 0.0 20" 11-13 MH gravel, some silt. Well compacted spoon no visible contamination 6 12-10 moist. Hue 7.5 YR 2.5/1 Black Full analysis and Immunoassay samples collected. Sample collected 7 End of boring. Grout hole to 4 ft bgl and repaired concrete core. 9 Soil Descriptions* Sym Silt & Clay Gravel Sym Size (mm) Type Inorganic GW well graded gravel no fines Fine Medium Coarse silts and very fine sand low plast. ML poorly graded gravel GP little fines 4.8-19 19-75 gravelly, sandy, silty clay Gravel CL low plast. sand, silt, gravel mix some fines GM 08-043 2.0-4.8 43-2.0 micaceous/diatomaceous Sand MH high plast. sand, clay, gravel, mix GC some fines <.08 Silt & clay high plasticity clay CH high plast. med. dense very loose loose Soil density Organic well graded gravelly no fines very dens dense silty clay low plasticity OL low plast poorly graded gravelly SP little fines sub angular angular very ang. clay med, to high plasticity Angularity ОН high plast. silty-sand sandy-silt some fines rounded well round sub round humus, swamp soils, organic PT Peat sand clay mixture SC some fines

Source Unified Soil Classification System

Note - density also in blows/foot above

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New York, New York 10012

Geologic Boring Log

Slop Oil Tank 103 SWMU 35

									lop Oil Tank 103 SWMU 35
oring ID		Client:			Pi	oject:			abucoa, Puerto Rico
35-02			co Sun Oil C			CRA Facility Investig	ation		rilling Contractor
oject No.			ogist/Enginee	r		riller			aca & Sierra
•		Gustavo F				onstancio Olivo			ampler type
ate Started	1	Date Compl	leted			rilling Method			"x 24" Carbon Steel Split Spoon
23/96		7/23/96			1	ripod	Soil Desc		
Depth		Reco-	Blow	PID					
bgl	USCS	very	Counts	(ppm)		Descriptions ma	ade from auger cu	tungs, i	unless otherwise noted.
(ft.)	Symbol	(per 24")	(per 6")				size, sorting, moi		
0	GM		6-11-7-7	0.0	0-2 ft (Gravel backfill zone, la	urge gravel, sai	nd, sil	t, and clay mix
_				ļ	Poorly	sorted well compacted	l no visible co	ntamu	nation, Dry
					Hue #1	for gley 5/5 GY green	nish gray		
		1	1		Full an	alysis and Immunoass	ay samples col	llected	d.
1	Sample c	allasted		1		•			
	Sample c	onected		l					
				أمما	1 4 8	Same as above no vis	ible contamin	ation.	
2	GM	24"	5-7-28-28	0.0	Endler Endler	alysis and Immunoass	av samples co	llecte	d.
				1	ruli ar	iai à 212 min minimios23	a, sanpies oo		
3	Sample c	ollected							
			ŀ						
			1						
4		İ			4-6 ft	-Drill using drive poin	t to 6 ft.		
7	[29			
_]	i I							
5	ļ .								
		i I		'					
						Clay - high plasticity d	lence (micaceo	nıs) lit	rile or no sand or
6	MH	24"	16-20-	0.0	0-81f	l, some silt. Well com	-ceted encon I	no visi	ible contamination
			25-20		grave	, some silt. Well com	pacted spoon r	IO 4191	IOIC COHAMITATION
	Ì	92				Hue 7.5 YR 2.5/1 Bl		114-	a a
7	Sample	collected	}		Full a	nalyses and Immunoas	say sample co	Hecte	a.
·			1						
			i 1						
0	1	1			End o	f boring.			
8	ŀ	1]]			_			
	1	1			i				
			1]						
9	1								
	Į.		1		l				
	<u> </u>	<u> </u>			Ь.—	C-il Descriptions			
			4/1			Soil Descriptions*	lens e Ci	Sym	
Туре		Size (mm)	Gravel	Sym		Silt & Clay	23tm	Inorganic
	Coarse	Medium	Fine	no fines	GW	well graded gravel	 	1.c	silts and very fine sand
Gravel	19-75	2	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	
Sand	2.0-4.8	.43-2.0	.08043	some fines	GM	sand, silt, gravel mix	low plast.	CL	gravelly, sandy, silty clay
Silt & clay	16		<.08	some fine	GC	sand,clay,gravel,mix	high plast.	МН	micaceous/diatomaceous
			med dense		T		high plast.	СН	high plasticity clay
Soil density	very loose			no fines	sw	well graded gravelly	1		Organic
	dense	very dens			4	poorly graded gravelly	low plast.	OL	silty clay low plasticity
Angularity	very ang.	angular	sub angular	little fine		silty-sand sandy-silt	high plast.	ОН	clay med, to high plasticity
	-	Ided	well round	some fine	s SM	FRITA-28110 29110A-2111	1B., 5.m.		
Note - density	sub round	rounded	Well found	some fine	s SC	sand clay mixture	Peat	PT	humus, swamp soils, organic

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New York, New York 10012

Geologic Boring Log

		(4)					DISSOIA		ir Flotation Unit SWMU 30
Boring ID		Client:	·	1.0		Project: RCRA Facility Investiga	tion		Location Yabucoa, Puerto Rico
36-0			ico Sun Oi ologist/Engic		-	NCKA Paciny mvesnga	uon		Drilling Contractor
Project No.			ologistiengit 1. Rivera	icer		Constancio Olivo			Jaca & Sierra
Date Started		Date Com				Drilling Method			Sampler type
7/18/96		7/18/96	F			Tripod			2"x 24" Carbon Steel Split Spoo
Depth		Reco-	Blow	PID			Soil Desc	riptio	n
bgl	USCS	very	Counts	(ppm)		Description made	from auger cut	tings, u	ınless otherwise noted.
(ft)	Symbol	(per 24")	(per 6")			(grain siz	e, sorting, moi	sture, c	color/hue etc.)
0	SM	14	2-2-4-6	15	0-2 fi	L. Sand to silty sand to sa	ndy clay. Po	orly g	graded, loose to stiff,
ŭ					slight	tly moist to wet, dark gre	enish brown	(2.5)	7 4/2) to dark
1	Sample c	ollected				ish gray (Gley 2, 4/1, 5B			
•	Башріс (pyrite	e, and lithic fragments va	rying in size	from	fine to coarse.
2	CL	12	4-4-5-6			ocarbon odor and stainin			
2		- 1-	, , , , ,			unoassay sample collecte			
2				1	2-4 f	t. Sandy clay, stiff, slight	ly moist, da	rk gre	enish gray (Gley 1, 4/1, 5GY)
3					Onar	tz sand, mica, pyrite, and	lithic fragm	ents	<u> </u>
,	Somale -	olloctod			Anni	ng in size from fine to co	arse, Slight	hydro	carbon odor.
4	Sample c	onected				unoassay sample collecte		,	
_				21	шши	mioussuy sample concern			
5									
	CI CM	14	7-6-10-15	1	6_8 f	t. Sandy clay to sand, sof	to loose, sl	ightly	moist to moist, dark
6	CL, SM	14	7-0-10-13	• 1	greet	nish gray (Gley 1, 4/1,5G	Y). Quartz s	and. 1	nica, pyrite.
-					and I	ithic fragments varying i	n size from f	ine to	coarse, Slight.
7	C	-1141				ocarbon odor.			, 40— 000 — 5
	Sample c	onected		:		unoassay sample collecte	d		
8						ing groundwater encount		Borir	ng terminated.
					D. 111	nig Grownandin and announce			-5
	<u> </u>				Time all	af basina			
				,	End	of boring.			
		İ							
	<u> </u>								
			Ì						Y.
			1		i				
		1			1			5	
	<u></u>					Soil Descriptions*			
				lo .	S	Son Descriptions	Silt & Clay	Sym	
Туре	 	Size (mm		Gravel	Sym	mell graded gravel	on a ciaj	LOY III	Inorganic
	Coarse		Fine	no fines	_	well graded gravel	low plast.	ML	silts and very fine sand
Gravel	19-75		4.8-19	little fines	GP	poorly graded gravel	***	CL	gravelly, sandy, silty clay
Sand	2.0-4.8	.43-2.0	.08043	some fines		sand,silt,gravel mix	low plast.	MH	micaceous/diatomaceous
Silt & clay		光速 。		some fines	GC	sand,clay,gravel,mix	high plast.	·	high plasticity clay
Soil density	very loose		med, dense	Sand		W	high plast.	СН	
	dense	very dens	e	no fines	-	well graded gravelly		16:	Organic silty clay low plasticity
					I on	t and the second second lies	low plast.	IOL	entry clay fow blasticity
Angularity	very ang	angular	sub angular	little fines	-	poorly graded gravelly		+	
Angularity Note - density	sub round	rounded	well round	little fines some fines	-	silty-sand sandy-silt	high plast.	OH PT	clay med. to high plasticity humus,swamp soils, organic

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Geologic Boring Log

		-			ī	roject:			ocation		
oring ID		Client: Duerto R	ico Sun Oi	il Compar		roject: CRA Facility Investigat	ion		Yabucoa, Puerto Rico		
36-02 Project No.	2	AMALGO	ologist/Engi	neer	·	riller			Orilling Contractor		
roject ivo.		Gustavo				Constancio Olivo		J	aca & Sierra		
ate Started		Date Com			Drilling Method Sampler type						
/23/96		7/23/96	•		3	.25"ID - 6.00"OD Hollo			2"x 24" Carbon Steel Split Spo		
Depth		Reco-	Blow	PID			Soil Descr	_			
bgi	USCS	very	Counts	(ppm)					mless otherwise noted.		
(ft.)	Symbol	(per 24")	(per 6")	************		(grain siz	e, sorting, mois	ture, c	olor/hue etc.)		
0	GM	16"	1-4-4-3	68.0	0-2 ft	Top 4" gravel landscape	fill, 4" -2 f	Grav	el and silty clay mix		
· I	0,				Backí	ill zone Poorly sorted, no	visible con	tamin	ation, moist		
		1				·					
1				li li	Full a	nalysis and Immunoassa	y samples co	llecte	:d.		
•				I			-				
}	Sample c	ollected									
	GM	18"	4-5-6-9	32.0	2-4 ft	Same as above, still in b	ackfill zone.	, stron	ng product odor		
2	GIVI	10	4-3-0-7	52.0	Full a	nalysis and Immunoassa	v samples co	llecte	ed.		
	1			i	1 411 4	ndiyoto wie zizii	,				
_	<u> </u>	-1141									
3	Sample c	onected									
				1							
		1.00	7 7 0 0	0.0	4 6 50	Silty clay (micaceous) d	lense high pl	astici	ty little or no		
4	ML	16"	7-7-8-9	0.0	4-0 1	l or sand, no product ode	or dry		y		
		14		1	grave	f or said, no product ode f1 for gley 4/5 GY Dark	n, wy. oreenish ora	v			
					Hue #	11 for gley 4/3 O1 Dark	Erecinsii Eru	.9			
5											
	76										
						mm			nome cand		
6	ML	12"	1-3-6-7			Silty clay (micaceous) I		avers	ome sand,		
			(no vi	sible contamination, dry.					
					Hue	1 for gley 2.5 10 Y Gree	enish diack.	_114	_3		
7	Sample o	ollected			Full a	malysis and Immunoassa	y samples c	OHECU	ea.		
							_				
8					End (of boring. Grout hole to s	surface.				
9	1				1						
					<u> </u>						
						Soil Descriptions*		,			
Туре		Size (mm)	Gravel	Sym		Silt & Clay	Sym	<u> </u>		
<u> </u>	Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic		
Gravel	19-75		4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand		
Sand	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly, sandy, silty clay		
Silt & clay	The second		<.08	some fines	GC	sand,clay,gravel,mix	high plast.	мн	micaceous/diatomaceous		
Soil density	very loose		med. dense	Sand	1		high plast.	CH	high plasticity clay		
COU GENSITÀ	dense	very dens		no fines	sw	well graded gravelly			Organic		
A ministrative		angular	sub angular			poorly graded gravelly	low plast.	OL	silty clay low plasticity		
Angularity	very ang.	 			-	silty-sand sandy-silt	high plast.	он	clay med. to high plasticity		
	hards a serve a	toome dad	AND DATES	ICAMP TIME							
Note - density	sub round	rounded	well round	some fines		sand clay mixture	Peat	PT	humus, swamp soils, organic		

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Geologic Boring Log

(ft.) Sy	J J J J SCS				лу	Project: RCRA Facility Investiga Driller	tion		Location Yabucoa, Puerto Rico		
roject No. Pate Started 1/3/96 Depth bgl U(ft.) Sy 0 (J J J J J J	AMAI Ge Gustavo Date Com 7/3/96	ologist/Engi Felipe				tion				
Depth bgl (ft.) Sy 0 (ISCS	Gustavo Date Com 7/3/96	Felipe	ineer		Driller					
/3/96 Depth bgl U: (ft.) Sy 0 (ISCS	7/3/96				Driller Drilling Contractor					
/3/96 Depth bgl U: (ft.) Sy 0 (ISCS	7/3/96	pieted		Constancio Olivo Jaca & Sierra Drilling Method Sampler type						
Depth bgl U: (ft.) Sy 0 (ISCS					Drilling Method	low Stem Av		Sumpler type 2"x 24" Carbon Steel Split Spoon		
bgl U: (ft.) Sy 0 (ISCS		Blow	PID		3.23 ID-0.00 OD 1101	Soil Desci				
(ft.) Sy		1				Dannintian made		-	unless otherwise noted.		
0	ymbol [very	Counts	(ppm)		•	ze, sorting, mois				
	03.7 T	(per 24")	(per 6")		0.164			sime,	Solorniae etc.)		
1 Sar	GM	12"	0-0-10-5	P		Gravel and large stone b	ackiiii		×		
1 Sar					181 10	ot dug by hand					
l Sai						A hour dans an ale frances as	nto and mica	Ma	iet Une #1 for aley 5/10		
	mple co	ollected							ist Hue #1 for gley 5/10		
				1	green	ish gray. Immunoassay	sample cone	cieu.			
						o	1	:	I		
2	GM	18"	7-7-7-5			t Same as above. No vist	uai contamin	ation	immunoassay sample		
	I				colle	cted.					
3 Sai	mple co	ollected									
	- 1				Drill	to 6 ft using drive point.					
4											
		·									
	ŀ										
5											
1											
	- 1										
6	ML	24"	2-3-3-4			t Silty clay - little or no s		l.			
						ly sorted, loosely packed					
						isual contamination. Mo		Y 4/3	Olive Brown.		
7 Sai	mple co	ollected			lmm	unoassay sample collecte	·đ.				
8	1				End (of boring. Grout to surfac	e.				
	l				ŀ						
9											
ĺ											
		-				Soil Descriptions*					
Туре		Size (mm))	Gravel	Sym		Silt & Clay	Sym			
	arse	Medium	Fine	no fines	GW	well graded gravel			Inorganic		
Gravel 1	19-75		4.8-19	little fines	GP	poorly graded gravel	low plast.	MIL	silts and very fine sand		
	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay		
Silt & clay		31 See 2014	<.08	some fines	GC	sand,clay,gravel,mix	high plast.	МН	micaceous/diatomaceous		
	ry loose	loose	med. dense	Sand			high plast.	СН	high plasticity clay		
· ·	dense	very dens		no fines	sw	well graded gravelly	-		Organic		
			sub angular		_	poorly graded gravelly	low plast.	OL	silty clay low plasticity		
· · —	y ang. o round	rounded	well round	some fines		silty-sand sandy-silt	high plast.	ОН	clay med, to high plasticity		
Note - density also				some fines		sand clay mixture	Peat	PT	humus,swamp soils, organic		
NOTE - MEDISITY BISO	ai biows	ATOME STORE				Unified Soil Classification Sy					

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Geologic Boring Log

			9 500				Dissolved Ai	-			
loring ID		Client:			Project		4:		ocation /abucoa, Puerto Rico		
36-0			ico Sun O			Facility Investiga	ition		Prilling Contractor		
roject No.			ologist/Engi	Deel	Driller	ncio Olivo			aca & Sierra		
		Nestor N	A. Rivera		Constancio Olivo Jaca & Sterra Drilling Method Sampler type						
late Started /17/96		7/17/96	pieteu		Tripo				"x 24" Carbon Steel Split Spoo		
		Reco-	Blow	PID			Soil Descr	iptio	n		
Depth	uscs	very	Counts	(ppm)		Description made			nless otherwise noted.		
bgl		0 - 22	(per 6")	(ppin)			ize, sorting, mois				
(fl.)	Symbol	(per 24")	3-4-3-3	15	0_2 ft Silts				raded, loose, slightly		
0	SP, SM	10	3-4-3-3	15	moist dark	brown (10YR3/3)	to dark green	ish g	ray (Gley 1,3/1,5G).		
. 1	1 1					i, mica, pyrite and					
1			Ř		in niza fron	Sne to coarse. H	vdrocarbon o	dor a	nd visible product.		
	Sample c		اءممدا			is and Immunoassa					
2	CL	14	3-2-3-6								
		-			z-4 IL San	ly clay. Stiff, sligh	d miss must, dati	v Rici	lithic		
3	Sample c	ollected		- 1	(Gley 1, 3/	1,10Y) Quartz sand	u, mica, pyrite	ים כו מנונו	ight ador		
					rragments	varying in size from	n tine to coar	55. 31 micel	completed		
4	[s:]				Full analys	is, immunoassay a	na pnysiocnei	ınıcal	samples collected		
				0							
5					No sample	collected.					
	1								(01. 1.2/1.503)		
6	SM	NR	-9-11-1	12	6-8 ft. San	dy clay, stiff, wet,	dark greenish	ı gray	(Gley 1,3/1,5GY)		
					to black (G	ley 1,2.5/N). Sand	d composed of	f qua	tz, mica, pyrite and lithic		
7	Sample c	ollected		4	fragments	varying in size from	m fine to coar	se. H	ydrocarbon odor.		
			3		Full analys	is, immunoassay a	nd physiocher	mical	samples collected.		
8											
				8							
		18	5-4-7-9	18	Boring was	offset because no	recovery at o	rigina	al location.		
					Offset bori	ng was to collect 6	5-8 ft. sample.				
		I .									
	1	l									
	1										
					End of bor	ing. Grout to surfa	ice.				
					End of bor	ing. Grout to surfa	ce.				
					End of bor	ing. Grout to surfa	ce.				
					End of bor	ing. Grout to surfa	ice.				
		7 m			End of bor	ing. Grout to surfa	ce.				
					End of bor	ing. Grout to surfa	ce.				
		The same and a second		3	End of bor	ing. Grout to surfa	ice.		7		
						tr _{est} —	ice.		7		
					Soil	ing. Grout to surfa Descriptions*		Sym T	7		
Туре		Size (mm		Gravel	Soil Sym	Descriptions*		Sym			
	Coarse		Fine	Gravel no fines	Soil Sym GW well g	Descriptions*	Silt & Clay		Inorganic		
Gravel	19-75	Medium	Fine 4.8-19	Gravel no fines little fines	Soil Sym GW well gi GP poorly	Descriptions* aded gravel graded gravel	Silt & Clay	ML	Inorganic silts and very fine sand		
Gravel		_	Fine 4.8-19 .08043	Gravel no fines little fines some fines	Soil Sym GW well g GP poorly GM sand,s	Descriptions* raded gravel graded gravel ilt,gravel mix	Silt & Clay low plast. low plast.	ML CL	Inorganic silts and very fine sand grayelly,sandy,silty clay		
Gravel Sand	19-75	Medium	Fine 4.8-19	Gravel no fines little fines	Soil Sym GW well g GP poorly GM sand,s	Descriptions* aded gravel graded gravel	Silt & Clay low plast. low plast. high plast.	ML CL MH	Inorganic silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous		
Gravel Sand Silt & clay	19-75	Medium 43-2.0	Fine 4.8-19 .08043	Gravel no fines little fines some fines	Soil Sym GW well gi GP poorly GM sand,s GC sand,c	Descriptions* aded gravel graded gravel lt,gravel mix lay,gravel,mix	Silt & Clay low plast. low plast. high plast.	ML CL	Inorganic silts and very fine sand grayelly,sandy,silty clay micaceous/diatomaceous high plasticity clay		
Gravel Sand Silt & clay	19-75 2.0-4.8	Medium 43-2.0	Fine 4.8-19 .08043 <.08 med. dense	Gravel no fines little fines some fines	Soil Sym GW well gi GP poorly GM sand,s GC sand,c	Descriptions* raded gravel graded gravel ilt,gravel mix	Silt & Clay low plast. low plast. high plast. high plast.	ML CŁ MH CH	Inorganic silts and very fine sand grayelly, sandy, silty clay micaceous/diatomaceous high plasticity clay Organic		
Gravel Sand Silt & clay	19-75 2.0-4.8 very loose	Medium ,43-2.0 loose	Fine 4.8-19 .08043 <.08 med. dense	Gravel no fines little fines some fines some fines Sand no fines	Soil Sym GW well gi GP poorly GM sand,s GC sand,c	Descriptions* aded gravel graded gravel lt,gravel mix lay,gravel,mix	Silt & Clay low plast. how plast. high plast. high plast.	ML CL MH CH	Inorganic silts and very fine sand gravelly, sandy, silty clay micaceous/diatomaceous high plasticity clay Organic silty clay low plasticity		
Gravel Sand Silt & clay Soil density	19-75 2.0-4.8 very loose dense	.43-2.0 loose very dens	Fine 4.8-19 .08043 <.08 med. dense	Gravel no fines little fines some fines some fines Sand no fines little fines	Soil Sym GW well g GP poorly GM sand,s GC sand,c SW well g SP poorly	Descriptions* aded gravel graded gravel lit,gravel mix lay,gravel,mix	Silt & Clay low plast. low plast. high plast. low plast. high plast.	ML CŁ MH CH	Inorganic silts and very fine sand grayelly, sandy, silty clay micaceous/diatomaceous high plasticity clay Organic		

611 Broadway Suite 907G New York, New York 10012

Geologic Boring Log

Dewatering Chamber SWMU 38

						<u> </u>			watering Chamber SWINTO 38
oring ID		Client:				Project:			Location Yabucoa, Puerto Rico
38-0			co Sun Oil			RCRA Facility Investig	ation		Drilling Contractor
roject No.			logist/Engine	eer	_	Driller			Jaca & Sierra
		Gustavo I				Constancio Olivo			Sampler type
ate Started		Date Comp	pleted			3,25" ID - 6.00" OD Ho	llow Stem A		2"x 24" Carbon Steel Split Spoon
7/10/96		7/10/96	-	DID.		3.23 ID-0.00 OD IIC		escriptio	
Depth		Reco-	Blow	PID		D			unless otherwise noted.
bgl	USCS	very	Counts	(ррпп)			in size, sorting, I		
(ft.)	Symbol	(per 24")	(per 6°)		A = A:				
0	GM	15"	4-13						sely packed, backfill zone
		Į.	14-10			sible contamination, dry		дгау.	
						1 for gley 5/5 GY greet			
1	Sample c	ollected		1	lmmu	noassay sample collecte	ed.		
		100							
			i						
2	GM	18"	6-7-6-6	0.0	2-4 ft	Same as above, slightl	y darker, no v	visible co	ontamination,
_					Immu	noassay sample collecte	ed.		
3	Sample o	ollected			Drill t	to 6 ft and collect sampl	e for analysis	3	
,				j		_			
				1					
4	GM		Ĭ	0.0	4-6 ft	Same as above.			
~	0.41			•					
,	İ								
5		12							
424			1064	0.0	2 O &	Top of spoon (6-7ft) -	Silt and clay		
6	ML	22"	1-2-6-4	0.0	D-44	m of spoon (7-8ft) - Sa	nd eilt and ah	undant n	vrite and mica
					Botto	or no gravel, saturated a	na snt mia ab	de conta	mination transition
		<u> </u>			ιιπιε	or no graver, saturated a from silty sand to med :	up, no visio	on 12" e	aniested bottom 10"
7	Sample	ollected			zone	from silty sand to med :	sanu, Dry ac i	op iz s	attifated bottom 10.
		▼			L	10 YR 4/3 reddish brow			
				,		inoassay sample collect			
8	1				End o	of boring. Grouted to su	rface.		
	ł								
					-				
		}						93	
						Soil Descriptions*			
Туре	T	Size (mm)		Gravel	Sym		Silt & Clay	Sym	
	Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic
Gravel	19-75		4.8-19	little fines	GP	poorly graded gravel	low plast	ML	silts and very fine sand
and	2.0-4.8	43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast	CL	gravelly,sandy,silty clay
silt & clay			<.08	some fines	GC	sand,clay,gravel,mix	high plast.	мн	micaceous/diatomaceous
oil density	very loose		med dense	Sand			high plast.	СН	high plasticity clay
wa wedsity	dense	very dense		no fines	sw	well graded gravelly			Organic
Lambaria.		angular	sub angular	little fines	SP	poorly graded gravelly	low plast.	OL	silty clay low plasticity
Ingularity	very ang.		well round	some fines	SM	silty-sand sandy-silt	high plast.	он	clay med, to high plasticity
	sub round	rounded	Act tomer					PT	humus,swamp soils, organic
Note - density		10 1		some fines		sand clay mixture	Peat	IFI	Hitting's went in pours' or P

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Geologic Boring Log

					Geologic Do	1116 206						
								Dewatering Chamber SWMU	38			
ring ID		Client:			Project:		_	ocation Process Piece				
38-		Puerto R			RCRA Facility	Investigation		abucoa, Puerto Rico				
oject No		AMAI Geo		peer	Driller	• .	orilling Contractor aca & Sierra					
		Gustavo			Constancio Ol	100	ampler type					
te Start	ed	Date Com	eleted		Drilling Method 3.25" ID - 6.00	"x 24" Carbon Steel Split Spoo	n					
11/96		7/11/96	701		3.23 10 - 0.00		oil Desc					
)epth	*10.00	Reco-	Blow Counts	(2000)				tings, unless otherwise noted.				
bgl	USCS	very (per 24")	(6" each)	(ppm)	•	(grain size, so	rting, moi	sture, color/hue etc.)				
(ft.)	Symbol GM	24"	4-12	0.0	0-2 ft Gravel sand	and silt mix, poorl	y sorted	, loosely packed, backfill zone				
U	Givi	-	12-9		No visible contamir	ation, dry through	out, Hu	e #1 for gley 5/5 GY greenish g	тау.			
					Full analysis and Im	munoassay sampl	es colle	cted.				
1												
	Sar	nple colle	cted			ş.,						
		<u> </u>			_		11.	1termination not as day				
2	GM	23"	6-7-6-6	0.0	2-4 ft Same as abov	2-4 ft Same as above, slightly darker, no visible contamination, not as dry Full analysis and Immunoassay samples collected.						
					Full analysis and II	nmunoassay samp	ies com	etta.				
		<u> </u>	<u> </u>		Drill to 6 ft and col	last comple for ans	lveis					
3	Sai	nple coll	ected		Dilli to o it and coi	iect sample for an	1,515					
		ļ										
15	1		200	0.0	4-6 ft same as abov	'e						
4	ļ	1	1	0.0								
		1			1							
5	\	Ì	1	1								
,				Į.	1							
	1		1	1					0.5			
6	ML	22"	1-1-2-3	0.0			and cla	y, dry, low plasticity, no gravel	UI			
	1	1		1	larger sizes, Micac	eous.	محسطم ام	lant aveite and mica				
	1		•		Bottom of spoon (/-8π) - Sand Sill al	visible :	lant pyrite and mica contamination, transition				
7	L	<u></u>	<u> </u>	4	little of no gravel,	d to cand Dry at t	on 12" s	aturated bottom 10".				
***	Sa	mple coll	ected	-{	Top - Hue chart #1	for elev 4/10 Dar	k greeni	sh gray.				
	1	1 _	1		Bottom - Hue 10 Y	R dark greenish b	rown					
8	_	╇		┥	Full analysis and l	mmunoassay samp	le colle	cted. Duplicate taken (9.0-9.5)				
1	1			1	Installed temporar	monitoring well	point at	11 ft bgl				
-	1		1	1		_						
- ∳ :	8			1								
11	1											
					Well Con	struction Details		<u> </u>				
Casing n	naterial		Screen sl	ot size	Screen Interval	Filter Pack		Cap Type				
2" X S	chedule 4		0.02	0 inch	6-11 ft	No. 2 Silic	a sand	Watertight				
Security	casing/m	nbole:			Lock type:	1						
none					none							
Notes:												
					Well De	velopment Data						
					44 €11 DC	. vivpinent som	Volume 1	ourged:				
Date:	100/07	Techniq	ue:	n ucina (5/8" high density po	vethylene hose.		55 Gallons				
7/	22/96			p using. μS/cm)	pH	Notes: SC- specif	ic condi					
1-141-1		mp (°C) 25		,510	7.3	Purge water clear a	fter pun					
Initial: Final:	-	25		,440	6.96 SC - specific conductance							

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Geologic Boring Log

Dewatering Chamber SWMU 38

									watering Chamber SWMU 38 Location	
oring ID		Client:				roject:	tion		Yabucoa, Puerto Rico	
38-0			co Sun Oil			RCRA Facility Investiga	HIOR		Drilling Contractor	
roject No.			logist/Engine	er	Driller Constancio Olivo				Jaca & Sierra	
		Gustavo I		Drilling Method Sampler type						
ate Started		Date Comp	Heteu			3.25" ID - 6.00" OD Hol	llow Stem A		2"x 24" Carbon Steel Split Spoon	
7/11/96		7/11/96	D1	PID		5.25 ID - 0.00 OD IIO		escriptio		
Depth		Reco-	Blow			December of			inless otherwise noted.	
bgl	USCS	very	Counts	(ppm)			n size, sorting,			
(ft.)	Symbol	(per 24")	(per 6")			(gran	n size, sorung,	moisture, c	pocked backfill zone	
0	GM	24"	55-47	0.0	0-2 ft	Gravel sand and silt mix	c, poorty son	tta , well	Packed, backlin zone	
			41-26			sible contamination, dry		Hue IV	I K 4/3 blown.	
			ŀ	ľ	lmmu	noassay sample collecte	a.			
1	Sample co	ollected	1							
		- 1		1						
2	CL	24"	9-10	0.0	2-4 ft	Top of spoon (0-6") san	ne as above.			
_			11-13		Botto	m of spoon - Gravel and	fine sand, a	bundant (dolomite rock fragments, no	
					visible	e contamination, dry, ve	ry well pack	ed spoon	. Hue 5Y 3/2	
3	Sample c	ollected				olive gray.				
,			}			noassay sample collecte	d.			
	}					- •				
4	CL		ŀ	0.0	4-6 ft	Same as above				
4	CL									
_										
5										
	٠	0.45		0.0	< 0 A	Top of spoon (16") - Si	ilt sand and	clav		
6	CL	24"	1-1-3-4	0.0	Data	m of spoon (7-8ft) - Cla	v Sand and	silt. abu	ndant pyrite and mica	
					1:ela	or no gravel, saturated at	tin no visit	ole contar	mination, transition	
					Hime 4	from silty sand to med s	and devote	on 16" sa	turated hottom 8".	
7		<u> </u>			zone	Hue #1 for gley 4/10 D	and, dry are ork meanish	oman obso		
	Sample o	ollected			Top -	Hue #1 for giey 4/10 D	ark greenish be	. graj		
						m - Hue 10 YR 4/2 Dari		JWII.		
8		▼				inoassay sample collecte			17	
					End o	of boring. Grouted to sur	rtace.			
		ļ								
		İ							797	
	<u> </u>			<u></u>	<u>L</u> .					
						Soil Descriptions*	One 0 One	le		
Туре		Size (mm)		Gravel	Sym		Silt & Clay	Sym	Incompanie .	
	Coarse	Medium	Fine	no fines	GW	well graded gravel		Ti as	Inorganic	
Gravel	19-75	A. T.	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand	
Sand	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay	
Silt & clay	25.1 ,	\$300 E	<.08	some fines	GC	sand,clay,gravel,mix	high plast.	MH	micaceous/diatomaceous	
Soil density	very loose	_	med, dense	Sand		100	high plast.	СН	high plasticity clay	
ou negary	dense	very dense		no fines	sw	well graded gravelly			Organic	
4la		angular	sub angular	little fines	-	poorly graded gravelly	low plast.	OL	silty clay low plasticity	
Angularity	very ang.		well round	some fines	+	silty-sand sandy-silt	high plast.	ОН	clay med, to high plasticity	
Note - density	sub round	rounded	Men toming	some fines	-	sand clay mixture	Peat	PT	humus,swamp soils, organic	
		SVAME FAAT		a some lines		COMPANIES LIGHT LIGHTERS CO.				

611 Broadway Suite 907G New York, New York 10012

Geologic Boring Log

							Ţ	Dewat	tering Chamber SWMU 38
oring ID		Client:				roject:	·		ocation
38-0)4	Puerto Ri	ico Sun Oil	Сотралу	. 1	CRA Facility Investiga	ation		/abucoa, Puerto Rico
roject No.		AMAI Geo	logist/Engine	ег	-	Driller			rilling Contractor
·		Néstor M				Constancio Olivo			aca & Sierra ampler type
ate Started		Date Comp	oleted			Orilling Method			"x 24" Carbon Steel Split Spoon
7/22/96		7/22/96		I		Tripod	Soil Des		
Depth	1	Reco-	Blow	PID		w			unless otherwise noted.
bgl	USCS	vегу	Counts	(ppm)			size, sorting, m		
(ft.)	Symbol	(per 24*)	(per 6")	2.2	000	Sandy gravel. Poorly s	ested avet to	cohira	ted loose light olive
0	GM	ND	1-1-1-1			Sandy graves. Poorly s (2.5Y5/3). Sand varies			
					browt	(2.5 Y 5/3). Sand varies	in Size Hom	inic it	nents. Gravel composed
1	Sample co	llected	l i		comp	sed of quartz, mica, py		nagn	and complex collected
			1		of gra	nodiorite frag, Full anal	ysis and inur		ht cline brown
2	SP	ND	3-9-5-8	0.0	2-4 ft	Silty gravelly sand. Po	orly sorted, v	vet, lig	int olive brown
					(2.5Y	5/3). Sand varies in size	from fine to	very o	coarse, composed of
3	Sample c	ollected			quartz	, mica, pyrite, and lithic	c tragments.	ravel	composed of
]	grano	diorite. Full analysis an	d Immunoass	ay san	npies collected
4	SM	ND	3-8-14-42	0.0	4-6 ft	Sand. loose, wet, light	t yellowish bi	rown (Z.5 Y 6/3)
	1					composed of quartz, mi	ca, pyrite and	i lithic	tragments, varying
5		ļ			in siz	from fine to coarse.			
		1			Borin	g terminated			
6	MH	18"	107-47	0.0	6-8 ft	Boring continued on 7	/23/96 at 090	0 due	to refusal.
	Sample c	ollected	27-19					ity, ve	ery stiff, no visual contamination
7		1	1 1		Hue #	1 for gley 4/10 dark gr	een gray		
•	1				Full a	nalysis and Immunoass	ay samples o	oliecte	d
8			l I						
·	Ş1								
9									
		1							2.
10			j						
	1	l	1 1						
	1	1							
			ļ						
]						
	1								
		1				12			
		1							
				İ					
		i							
	┸	<u> </u>			<u> </u>	Soil Descriptions*	<u> </u>		· · · · · · · · · · · · · · · · · · ·
0	7	C1 (Gravel	Sym		Silt & Clay	Sym	
Туре	10	Size (mm	Fine	no fines	GW	well graded gravel			Inorganic
	Coarse	Medium		little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand
iravel	19-75	Market .	4.8-19			sand, silt, gravel mix	low plast.	CL	gravelly,sandy,silty clay
and	2.0-4.8	.43-2.0	.08043	some fines	GM	sand, siit, gravet mix sand, clay, gravel, mix	high plast.	МН	micaceous/diatomaceous
iit & clay		Salak.	<.08	some fines	GC	sand,clay,graver,inix		СН	high plasticity clay
ioil density	very loose	loose	med, dense	•	<u> </u>		high plast.	lcu	
	dense	very dens		no fines	sw	well graded gravelly		[O]	Organic silty clay low plasticity
Angularity	very ang.	angular	sub angular	little fines	SP	poorly graded gravelly	low plast.	OL	
			Accord manage	some fines	SM	la Para de la caractera de la constante de la constante de la constante de la constante de la constante de la c	high plast.	OH	clay med, to high plasticity
	sub round	rounded	well round	Some mics		silty-sand sandy-silt sand clay mixture	Peat	PT	humus,swamp soils, organic

611 Broadway Suite 907G

New York, New York 10012

Geologic Boring Log

Hazardous Waste Mixing Box SWMU 39

		Client:			P	roject:		1	ocation
oring ID 39-0			co Sun Oil	Company		CRA Facility Investig	ation	•	Yabucoa, Puerto Rico
roject No.			ogist/Engine			riller			orilling Contractor
roject No.		Gustavo F			(Constancio Olivo		J	aca & Sierra
ate Started		Date Comp			E	rilling Method			Sampler type
/28/96		6/28/96			3	.25" ID - 6.00" OD Ho		_	2"x 24" Carbon Steel Split Spoon
Depth		Reco-	Blow	PID			Soil Des		
bgl	USCS	vегу	Counts	(ppm)					unless otherwise noted.
(fL)	Symbol	(per 24 ⁸)	(per 6")				size, sorting, m		
0	SC	13"	3-3-4-7	0.0	0-2 ft	Sand and clay mix, Litt	le or no large	er size:	s, no rock fragments
v					Backfi	ll zone, very dry, well	packed, Hue	10.5	YR 4/3 brown
ļ	Sample co	llected	\times		no vis	ible contamination. san	ple collected	l for	
•	Sample Co	Mecteu	Į.			nalysis and Immunoass			d.
1				ľ	, 411 6	1017515 1010 1111111111	,,		
		l							
2		18"	6-10	16.0	2-4 ft	Sand, silt, clay, rock fra	agments, still	backf	ill zone,
2	SM		15-11			"- Brown, dry, silty sar			
] 5141								
•	0.4	ŀ	1	1	Midd	le 6" - Black, dry, silty	sand, strong	hydro	carbon odor
3	SM	ollogend	1	1					
	Sample c	onecteu		-	Ratta	m 6" - Brown, sand an	d gravel mix.	loose	ly packed, no product odor.
	SP			0.7	ACG	Sand and silt mix, sam	e as above, f	int hy	drocarbon odor.
4	SM		1	0.7	4-0 II C-il-:	ppears stained with blace	ck tar-like su	hetano	e
_	1 I		l		2011 a	ppears stained with bia	an complet o	ollacta	о. И
l			j	- 1	Full a	nalysis and Immunoass	ay samples c	OHECK	
					Drille	d to 10 feet and collect	ed splitspoon	ı soil s	ample.
. ↓	ļ .								_
10	sc	24"	2-3-11-17	0.3	10-12	ft Sand, silt and clay,	Low plasticit	y clay	, faint product odor,
- ~	1 -				Dry a	t top moist at the botton	m 2", Hue #2	for gl	ey 3/10G
	Sample o	ollected			Dark	greenish gray. Full ana	lysis and Imi	nunoa	ssay samples collected
	- Marie (Colle	cted a duplicate sample	e from 15-16	ft.	
						Soil Descriptions*			
Туре	T	Size (mm)		Gravel	Sym		Sitt & Clay	Sym	
	Coarse	Medium	Fine	no fines	GW	well graded gravel		1	Inorganic
Gravel	19-75	C+3	4,8-19	little fines	GP	poorly graded gravel	iow plast	ML	silts and very fine sand
Sand	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast	CL	gravelly,sandy,silty clay
Silt & clay			<.08	some fines	GC	sand,clay,gravel,mix	high plast.	мн	micaceous/diatomaceous
	very loose	loose	med. dense	Sand			high plast.	СН	high plasticity clay
Soil density				no fines	sw	well graded gravelly			Organic
	dense	very dense	sub angular	little fines	-	poorly graded gravelly	low plast.	OL	silty clay low plasticity
Angularity	very ang	angular	 		_	silty-sand sandy-silt	high plast.	ОН	clay med to high plasticity
i e	sub round	rounded	well round	some fines	PIAI	and amena	1 b		
Note - density				some fines	sc	sand clay mixture	Peat	PT	humus,swamp soils, organic

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Geologic Boring Log

Hazardous Waste Mixing Box SWMU 39

		Clients			D	roject:		L	ocation
Boring ID 39-0		Client:	co Sun Oil	Company		CRA Facility Investiga	ation	Y	abucoa, Puerto Rico
39-0. Project No.			ogist/Engine			riller			rilling Contractor
rroject No.		Gustavo F				Constancio Olivo			aca & Sierra
Date Started		Date Compl			I	rilling Method	_		ampler type
5/28/96		6/28/96	_		3	.25" ID - 6.00" OD Ho			"x 24" Carbon Steel Split Spoon
Depth		Reco-	Blow	PID			Soil Des	-	
bgl	USCS	very	Counts	(ppm)					unless otherwise noted.
(ft) •	Symbol	(per 24")	(per 6")			(grain	size, sorting, mo	oisture,	color/hue etc.)
0	SC	24"	4-8-8-6	0.0	D-2 ft	Sand and clay mix, Litt	le or no large	r sizes	, abundant rock fragments .
·		ļ.					dry, well pa	cked,	Hue 10.5 YR 4/3 brown
		1	1	1	no vis	ible contamination.			
1		1	1						
•	Sample co	ollected		[:	lmmu	noassay sample collecte	:d.		
	Sample	7.10	-	- 1		-			
2	SM	24"	5-3-9-9	3.0	2-4 ft	Sand, silt, clay, rock fra	gments, still	backf	ill zone,
2	2141	27	""		Strong	product odor, soil app	ears stained v	with bl	ack tar-like
		1	1	,	substa				
•	İ			ľ					
3	Sample c	Dostad	- 1	[Immu	noassay sample collecte	ed.		
	Sample	onected	1		.,,,,,,,,,,				
	0.4	ł		3.7	4.6 ft	Same as above			
4	SM		ì	3.7	- -0 10	Samo as asset			
•		ŀ							
		1		-					
			1						
		 	·						
i 1			ŀ						
1 1				- 53					
	!								
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1 1									
1 1			1						
1 1									
1 1		. 1							
10	sc	16"	2-3-5-5	0.3	10-12	ft Top of spoon 8" san	dy clay		
10	"	'`			Botto	m of spoon 8", sandy s	ilt little grave	i, som	e rock fragments,
1	Sample o	ollected	ļ		 Visua	l contamination and sli	ght hydrocar	bon oc	lor
	Sample	I	i			nalysis sample collecte			
	<u> </u>		<u> </u>			Soil Descriptions*		."	
		(C) (Gravel	Sym		Silt & Clay	Sym	1
Type	-	Size (mm)		no fines	GW	well graded gravel	7		Inorganic
	Coarse		Fine		GP	poorly graded gravel	low plast.	ML	silts and very fine sand
Gravel	19-75		4.8-19	little fines		sand, silt, gravel mix	low plast.	CL	gravelly,sandy,silty clay
Sand	2.0-4.8	.43-2.0	.08043	some fines	GM	sand, siri, gravel mix	high plast.	мн	micaceous/diatomaceous
Silt & clay			<.08	some fines	GC	Sand, Clay, graver, inix		СН	high plasticity clay
Soil density	very loose	loose	med_dense	Sand			high plast.	lon_	Organic
	dense	very dense		no fines	SW	well graded gravelly	1	To:	silty clay low plasticity
Angularity	very ang.	angular	sub angular	little fines	SP	poorly graded gravelly	low plast.	OL	clay med to high plasticity
	sub round	rounded	well round	some fines	SM	silty-sand sandy-silt	high plast.	ОН	humus,swamp soils, organic
Note - density		foot above		some fines	SC	sand clay mixture	Peat	PT	numus,swamp soils, organic
<u> </u>				•	Source	Unified Soil Classification Sy	/stem.		
					Source				

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Geologic Boring Log

Hazardous Waste Mixing Box SWMU 39

-		lient:			P	roject:		L	ocation
oring ID 39-0			co Sun Oil	Сотралу		CRA Facility Investiga	ation		abucoa, Puerto Rico
roject No.			ogist/Engine		D	riller			rilling Contractor
oject 110.		Gustavo F				Constancio Olivo		-	aca & Sierra
ate Started	J	Date Comp	leted	.,	I	rilling Method		Si	mpler type "x 24" Carbon Steel Split Spoon
/28/96		6/28/96			3	.25" ID - 6.00" OD Ho	llow Stem		
Depth		Reco-	Blow	PID			Soil Des		
bgl	USCS	very	Counts	(ppm)					unless otherwise noted.
(ft)	Symbol	(per 24")	(per 6")			(grain	size, sorting, m	oisture, e	color/hue etc.)
0	SC	24"	2-3-5-15	0.3	D-18"	Sand and clay mix, Lit	ttle or no larg	er size	s, abundant rock
_	1	į				ents and gravel. Backfil	l zone, very	dry, we	eli packed,
		1	Į.			ible contamination.			
1	l i		- 1			" Black strong hydroca			
•	Sample co	ollected			Immu	noassay sample collect	ed.		
	Jampie			1					
2	SM	24"	17-20	17.4	2-4 ft	Sand, silt, clay, rock fra	agments, still	backfi	il zone,
2	J.VI	- 1	17-4		Strons	hydrocarbon odor, soi	i appears stai	ined wi	th black tar-like
	<u> </u>		**		substa				
•			i	ļ					
3	Sample c	ollected		}	Immi	moassay sample collect	ted.		
	Sample	onected	1	ŀ					
	63.4	24"	17-20	32.9	4-6 ft	Same as above			
4	SM	24	17-20	32.9	7-0 I	Diano as accord			
1		i							
	1								
1		İ							
	1								
i									
			180						
		1							
		l i							
l i	!								
1									
+	1	 		!	١				
10	SC	24"	3-2-3-5			ft sandy clay	1.6		
	1				sandy	clay little gravel no ro	ck tragments		-
	Sample	collected				al contamination and lig		on oac	or.
					Full a	nalysis sample collecte	d.		
						Soil Descriptions*		_	· · · · · · · · · · · · · · · · · · ·
Туре		Size (mm)		Gravel	Sym		Silt & Clay	Sym	
-7,5-	Coarse	Medium	Fine	no fines	GW	well graded gravel	<u>L</u>		Inorganic
Gravel	19-75	(A)	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand
	2.0-4.8	43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay
Sand Silv & clay	2.04		<.08	some fines	GC	sand,clay,gravel,mix	high plast.	MH	micaceous/diatomaceous
Silt & clay		loose	med, dense	Sand	\vdash		high plast	СН	high plasticity clay
Soil density	very loose			no fines	sw	well graded gravelly			Organic
	dense	very dense		little fines	+	poorly graded gravelly	low plast.	OL	silty clay low plasticity
Angularity	very ang	angular	sub angular			silty-sand sandy-silt	high plast.	ОН	clay med, to high plasticity
	sub round	rounded	well round	some fines	+	sand clay mixture	Peat	PT	humus,swamp soils, organic
	also in blows/	AVORE 1001		some fines	36	ISMIN DINT HIMMID	4 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		

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Geologic Boring Log

									Disposal Area SWMU 40
loring ID		Client:				Project:	·		Location Yabucoa, Puerto Rico
0-01		Puerto R	ico Sun Oi	l Compar		RCRA Facility Investigat	ion		Drilling Contractor
roject No.			ologist/Engin	icer		Driller Constancio Olivo			Јаса & Sierra
		Gustavo				Drilling Method			Sampler type
hate Started /27/96		Date Com 6/27/96	pieren			3.25" ID - 6.00" OD Holle	ow Stem Au		2"x 24" Carbon Steel Split Spoor
	<u> </u>	Reco-	Blow				Soil Descr		
Depth	TIECE		Counts	PID		Descriptions made			unless otherwise noted
bgl	USCS	very	(per 6°)	(ppm)			z, sorting, mois		
<u>(ft.)</u>		(per 24") 24"	14-15	0.0	0.2 A	- Sand and gravel, abund			
0	GM		12-04	0.0		sorting loosely compacte			
	Sample c	Difecten	12-04			10YR 5/4 yellowish brow			
1					Huc	101K 3/4 yellowish olow	, , , , , , , , , , , , , , , , , , ,		
_	I		(777		2 4 9	- Same as above no visib	de contamina	ation	
2	GM	24"	6-7-7-2				ne contamin	<i>a</i>	•
	Sample c	ollected	ŀ		ruii a	analysis sample collected			
3									
						. 611	-lessie Nes	wieib	le contamination . Some product
4	CL	1							le contamination. Some product
					odor.	Dry - Hue 7.5 YR 3/3 I	Dark brown.		
5 🕮									
6	CL				6-11	ft - Same as above			
7									
			1	1					
8									
	1				ı				
9									
10									
	1								
11	CL	24"	2-2-2-3	0.0	11-1	3 ft - Clay - dense plastic	inorganic cla	ay. R	led mottles. No visible
					conta	amination. Saturated at bo	ttom 2" of sp	olit s	poon. Hue: chart 1 for gley 3/N
12	Sample o	ollected	1		Dark	greenish gray. Full analy	sis sample c	ollect	ted
	<u>-</u>	[1			-			
13		\blacksquare			Auge	ers removed and boring gr	routed to sur	face.	
	-				٦	• •			
14.									
17,									_
	<u> </u>	<u> </u>	<u> </u>			Soil Descriptions*			
Terra	1	Size (mm)	Gravel	Sym		Silt & Clay	Sym	
Туре	Correc	Medium	Fine	no fines	<u> </u>	well graded gravel	, , , , , , , , , , , , , , , , , , ,	_	Inorganic
<u></u>	Coarse	MEGIUM	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand
Gravel	19-75	42.20	-	some fines	GM	sand silt gravel mix	low plast.	CL	gravelly, sandy, silty clay
Sand	2.0-4.8	.43-2.0	08043		_	· · · · ·	high plast.	MH	micaceous/diatomaceous
Silt & clay	13 ABEA		<.08	some fines	٠	Sand, Clay, graver, mix		CH	high plasticity clay
Soil density	very loose		med dense				high plast.	CH	
	dense	very dens	T	no fines		well graded gravelly		0	Organic
			Leady amounted	little fines	SP	poorly graded gravelly	low plast.	OL	silty clay low plasticity
Angularity	very ang.	angular	sub angular	nuic mies					the second of the second of the
Angularity	very ang. sub round	angular rounded	well round	some fines	_	silty-sand sandy-silt	high plast. Peat	OH PT	clay med. to high plasticity humus, swamp soils, organic

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Geologic Boring Log

oring lD		lient:				roject:			ocation
0-02			ico Sun Oi			RCRA Facility Investigat	ion		Yabucoa, Puerto Rico
roject No.			logist/Engin	eer		Driller			Drilling Contractor
•			I. Rivera			Constancio Olivo	. /-		laca & Sierra
te Started		Date Com	pleted		I	Orilling Method	C4 A 11		sampier type 2"= 24" Corbon Steel Split Spoot
25/96	(5/25/96				3.25" ID - 6.00" OD Holl	ow Stem Aug	SF 4	2"x 24" Carbon Steel Split Spoo
Depth		Reco-	Blow	ľ			Soil Descri		
bgt	USCS	very	Counts	PID					nless otherwise noted.
(ft.)	Symbol	(per 24*)	(per 6")	(ррт)		(grain siz	e, sorting, moistu	re, c	olor/hue etc.)
0	SM	19	8-10	0 (D-2 ft	. Clayey sandy silt. Very	hard, slightly	moı	st, yellowish brown (10YR
	Sample co	llected	10-10	:	5/4).	Sand composed of quartz	, mica, pyrite	and	i lithic fragments varying
1	<u> </u>			Į.	in siz	e from fine to coarse. Hy	drocarbon ode	or ai	nd staining observed.
_	[1		Full a	nalysis sample collected	15		
2	SP	20	8-7-6-6	0	2-4 ft	. Clayey gravelly sandy s	ilt. Very hard	, slig	chtly moist, yellowish brown
-	Sample co			l.	(10Y)	R5/4). Sand composed of	f quartz, mica,	руі	rite, and lithic fragments varying
3	Sample	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1	1	in siz	e from fine to coarse. Hye	irocarbon odo	r an	d staining observed.
3						malysis sample collected			
				ļ.					
4			. 1						
				ŀ					
1		1	·	3					
					r	4 to 12 ft. no sampling v	es performed		
- 1	i I	ļ		ļ	rrom	4 to 12 ft. no sampning v	as periorinea	•	
1			ŀ						
₩									
•				ĺ					cerrain with and modiles less
12	CL	19	2-1-2-3				tly moist, dar	k gr	ey (5Y4/1) with red mottles. Iro
	1				oxide	e staining.			
13			(%)						
	!								
14	CL	24	2-2-1-2	0	14-1	6 ft. Silty clay. Soft, sligh	tly moist, dar	k gn	ey (5Y4/1) with black mottles.
• •	Sample c	ollected	1]			oxide staining.			
15	Sample				Full	analysis sample collected			
13		<u> </u>				•			
1.0	l i				 Rori:	ng terminated.			
16	•								<u> </u>
				<u> </u>		Soil Descriptions*			
		.		Carral	Cum		Silt & Clay	ym	
Туре	 	Size (mm		Gravel	Sym				Inorganic
	Coarse	Medium	Fine	no fines		well graded gravel poorly graded gravel	low plast.	/IL	silts and very fine sand
Gravel	19-75		4.8-19	little fines	GP	· · · · · · · · · · · · · · · · · · ·		il L	gravelly,sandy,silty clay
Sand	2.0-4.8	.43-2.0	.08043	some fines		sand,silt,gravel mix			micaceous/diatomaceous
Silt & clay			<.08	some fines	GC	sand,clay,gravel,mix		MH.	
Soil density	very loose	loose	med, dense	Sand	$ldsymbol{ldsymbol{ldsymbol{eta}}}$		high plast.	CH	high plasticity clay
	dense	very dens	e	no fines	sw	well graded gravelly			Organic
Angularity	very ang.	angular	sub angular	little fines	SP	poorly graded gravelly	low plast.	DL.	silty clay low plasticity
rid mid ity	sub round	rounded	well round	some fines	SM	silty-sand sandy-silt	high plast.	ЭН	clay med, to high plasticity
				some fines	_	sand clay mixture	Pest	PT ·	humus,swamp soils, organic
Note - density	laa in blace	ifaat aha-	r#			ISANG CIAV DILXIUIC			

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Geologic Boring Log

						706.0 Z 01.1-BB		I	Disposal Area SWMU 40
rive ID		Client:			P	roject:		_	ocation
oring ID			ico Sun Oi	Compan		CRA Facility Investigati	on		/abucoa, Puerto Rico
0-03			logist/Engin			riller			rilling Contractor
oject No.			l. Rivera		•	Constancio Olivo			аса & Ѕіетта
nte Started		Date Com			P	willing Method			ampler type
6/25/96		6/25/96			3	.25" ID - 6.00" OD Hollo	ow Stem Aug	er 2	"x 24" Carbon Steel Split Spoo
	— Т	Reco-	Blow				Soil Descri	ptio	n e e e e e e e e e e e e e e e e e e e
Depth	uscs	very	Counts	PID		Description made i	from auger cuttir	gs, u	nless otherwise noted.
bgl		*	T	- 1			e, sorting, moist		
(ft)		(per 24")	(per 6")	(ppm)	2.0	Gravelly candy silt. Har	d. slightly me	oist.	yellowish brown (10YR5/6).
0	CL	12	7-7-8-9	را ۲	PA III	composed of quartz, mica	nvrite and li	thic	fragments varying in
1				l'	anu c	om fine to coarse. Hydro	ocarbon odor	and ·	staining observed.
1			i					mio .	Julian B Good Co.
	Sample c	ollected		12	full a	nalyses sample collected.	. 1 - 12 - 141- ;	.:	block (Glev) 2 5ND
2	CL	18	8-10-9-8	313	2-4 ft.	Gravelly sandy silt. Har	rd, slightly m	315L,	black (Gley 1, 2.514).
·				[9	Sand (composed of quartz, mica	a, pyrite and I	ithic -	tragments varying in
3	Sample c	ollected		ļ	ize fi	om fine to coarse. Roots	and hydrocar	bon	odor and staining observed.
,	1			[]	Full a	nalyses and Immunoassay	y sample colle	ected	i.
4				- 1					
7									
	<u></u> _			- 1.	6_ 8 ft	Immunoassay sample co	llected		
	Sample c	ollected		ľ	U-0 II	mundiozouj v=npr			
	1			}					
ı									
	1			ļ					
				i					
- 1			1						
. ↓				1					
10	CM SC	18	3-5-5-5	0	12-14	ft. Sand to sandy clay. L	Loose to stiff,	sligl	htly moist to wet, light grey
12	SM, SC			•	(Clay	1 7/N) Sand composed	of quartz, mi	ca, r	syrite and lithic fragments
	Sample o				vani	ng in size from fine to co	arse. Roots a	nd hy	drocarbon odor and staining
13		*		ŀ	varyı	ved. Full analyses sample	e collected	-	
							e concoida.		
14		1	1 I		Вогіг	ig terminated.			
				1					
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		Į.							
	1	1							
4									
	ì	ì	1						_
	<u> </u>	<u> </u>	<u> </u>			Soil Descriptions*			
					_	Son Descriptions	Silt & Clay	Sym	
Туре	<u> </u>	Size (mm		Gravel	Sym			,	Inorganic
	1 -	Medium	Fine	no fines	GW	well graded gravel	low plast.	ML	silts and very fine sand
	Coarse		1 40 10	little fines	GP	poorly graded gravel	7	CL	gravelly,sandy,silty clay
	19-75	for manage	4.8-19				low plast.	CL.	
Gravel		43-20	.08043	some fines		sand,silt,gravel mix			
Gravel Sand	19-75	43-2.0		some fines	-	sand,silt,gravel mix sand,clay,gravel,mix	and the same	мн	micaceous/diatomaceous
Gravel Sand Silt & clay	19-75 2.0-4.8	43-2.0	.08043	some fines	-		and the same	MH CH	micaceous/diatomaceous high plasticity clay
Gravel Sand Silt & clay	19-75 2.0-4.8 very loose	43-2.0 loose	.08043 <.08 med. dense	some fines	GC	sand,clay,gravel,mix	and a second		micaceous/diatomaceous high plasticity clay Organic
Gravel Sand Silt & clay Soil density	19-75 2.0-4.8 very loose dense	43-2 0 loose very den	.08043 <.08 med. dense	some fines Sand no fines	GC SW	sand,clay,gravel,mix well graded gravelly	high plast.		micaceous/diatomaceous high plasticity clay
Gravel Sand Silt & clay	19-75 2 0-4 8 very loose dense very ang	43-2 0 loose very den angular	.08043 < .08 med. dense se sub angular	some fines Sand no fines little fines	GC SW SP	sand,clay,gravel,mix well graded gravelly poorly graded gravelly	high plast.	СН	micaceous/diatomaceous high plasticity clay Organic
Gravel Sand Silt & clay Soil density	19-75 2.0-4.8 very loose dense very ang sub round	loose very den angular rounded	.08043 <.08 med. dense se sub angular well round	some fines Sand no fines	GC SW SP SM	sand,clay,gravel,mix well graded gravelly	high plast.	CH OL	micaceous/diatomaceous high plasticity clay Organic silty clay low plasticity

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Geologic Boring Log

					Ge	_			Disposal Area SWMU 40
: 10		lient:			P	roject:			ocation
oring ID 0-04			co Sun Oi	Сотрал		CRA Facility Investigati	ion		abucoa, Puerto Rico
roject No.			logist/Engin			riller	-		rilling Contractor
ojeci ivo.		Gustavo I			(Constancio Olivo			аса & Ѕіетта
ate Started		Date Comp			r	rilling Method			ampler type
6/27/96		5/27/96			3	.25" ID - 6.00" OD Hollo	ow Stem Aug	ger 2	"x 24" Carbon Steel Split Spoor
Depth		Reco-	Blow				Soil Descri		
bgl	uscs		Counts	PID		Descriptions made	from auger cutti	ings, u	nless otherwise noted.
-		(per 24")	(per 6")	(ppm)		(grain siz	e, sorting, moist	ture, co	olor/hue etc.)
(ft.)	GC	(pc: 24)	(pa. 0)	0.0	1-2 ft	- Sand, silt, and little gra-			
0	GC	- 1	1	1	Poors	orting. No visible contan	nination. Ver	y dry	Hue 10YR 5/4
		i				vish brown.			
1 [1	[3	yenov	VISII DIOWII.			
	1	- 1				Como ao abayo			
2	GC	į	1	0.0	2-4 Π	- Same as above.			
	į	1	l l						
3	1		- 1	- 1					
i		ŀ		- 1					I iula aardust odor
4	CL		- 1			- Silt and clay mix. No v		ninan'	is. Little product odor
	1	l	i	1	Dry -	Hue 7.5YR 3/3 Dark bro	wn		
5									
-	1		1	1					
6	CL	- 1		100.4	6-8 ft	- Same as above.			
0	CL								
_			. 1	ļ					
7				<u> </u>					
		1]	0.7	0 10	ft - Same as above. Darke	er in color. H	ue 53	R 4/2 Olive Gray.
8	CL			0.7	0-10	It - Saint as accite. Dan	••••••		•
				1					
9									
				1					
10	CL		1	0.0	10-13	ft - Same as above.			
									. art No misible
11	СН	24"	3-3-4-7	0.0	11-13	3 ft - Clay - dense high pl	lasticity clay.	Red	mottles. No visible
-					conta	mination. Saturated at bo	ottom 3". Hue	char	t 1 for gley
12	Sam	ple Coll	ected		4/10	Y dark greenish gray. Fu	ıll analysis s	ample	collected
12		<u> </u>							
13		₩							
13									
					1				
14		1			l				
	<u> </u>	<u> </u>			<u> </u>	Soil Descriptions*			
					-	Son Descriptions	Silt & Clay	Sym	
Туре	<u></u>	Size (mm		Gravel	Sym		Sill of Clay	37 III _	Inorganic
	Coarse	Medium .	Fine	no fines	GW	well graded gravel) e:	silts and very fine sand
Gravel	19-75	_	4.8-19	little fines		poorly graded gravel	low plast.	ML	
Sand	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay
Silt & clay	a Eddo	50003	<.08	some fines	GC	sand,clay,gravel,mix	high plast.	MH	micaceous/diatomaceous
	very loose	loose	med, dense	Sand	\Box	161	high plast.	СН	high plasticity clay
Soil density				no fines	sw	well graded gravelly			Organic
	dense	very dens			- -	poorly graded gravelly	low plast.	OL	silty clay low plasticity
Angularity	very ang.	1			$\overline{}$		high plast.	ОН	clay med, to high plasticity
	sub round			some fines		silty-sand sandy-silt	+	PT	humus, swamp soils, organic
Note - density	also in blow	s/foot abov	/e	some fines	s SC	sand clay mixture	Pent	11.4.	named and the name of the party

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Geologic Boring Log

									Disposal Area SWMU 40
Boring ID		Client:				Project:			Location
0-05			lico Sun C			RCRA Facility Investigatio	חכ		Yabucoa, Puerto Rico
roject No.			ologist/Engi	псег		Driller			Drilling Contractor
		Gustavo				Constancio Olivo Drilling Method			Jaca & Sierra Sampler type
ate Started		Date Com	pietea				w Stem And		2"x 24" Carbon Steel Split Spoo
6/27/96		6/27/96	Blow		<u> </u>		Soil Descri		
Depth	1,,,,,,,,	Reco-	Counts	PID				•	unless otherwise noted
bgl	USCS	very				•	sorting, moist		
(ft.)	Symbol	(per 24")	(per 6")	(ppm)	0.2.0	- Sandy silt mixture, little			
0	SM			U		•	or no grave	1 ()1	lock flagments. No
					lbroan	ct odor.			
1									
_				100		C			
2	SM			17.0	2-4 It	- Same as above.			
3					l				
	1							•.	22 1 21 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
4	ML			14.0		- Silty clay - very plastic, i			
					Stron	g product odor. Dry Hue 7.	.5YR 3/3 D	ark I	Brown.
5									
6	ML			0.3	6-11	ft - Same as above.			
			·						
7	İ								
	l								
8									
9					ŀ				
10	ļ	ŀ							
	1	-			l				
31	СН	24"	2-2-4-1	0.6		ft -Clay - dense high plast			
					Satur	ated bottom 5" - Hue Chart	I for gley	4/10	Y dark greenish gray.
12	Sam	ple colle	ected		Full a	nalysis sample collected			
13									
14			•						
	ļ		1						
						Soil Descriptions*			7
Туре		Size (mm))	Gravel	Sym	Sil	it & Clay S	Sym	U
<u>* * *</u>	Coarse		Fine	no fines	GW	well graded gravel			Inorganic
Gravel	19-75	1	4.8-19	little fines	GP	poorly graded gravel lov	w plast.	4L	silts and very fine sand
and	2.0-4.8	.43-2.0	.08043	some fines			w plast.	L.	gravelly,sandy,silty clay
	1		< 08	some fines	-			ИΗ	micaceoµs/diatomaceous
ilt & clav		loose	med. dense					ЭН	high plasticity clay
	Veni locce	- 447477	mod. Gense	~~~	CVV		D. 1 Property 1		
	very loose			no finac					(Franc
oil density	dense	very dens	_	no fines	-	well graded gravelly	w place Ir	л <u> </u>	Organic
oil density	dense very ang.	very dens angular	sub angular	little fines	SP	poorly graded gravelly lov	-)L	silty clay low plasticity
Silt & clay Soil density Angularity Note - density	dense very ang. sub round	very dens angular rounded	sub angular well round	little fines	SP SM	poorly graded gravelly lov silty-sand sandy-silt hig	gh plast.	DL DH PT	

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New York, New York 10012

Geologic Boring Log

· ·								_	Disposal Area SWMU 40
oring ID		Client:	· - c o:	1 C		roject: RCRA Facility Investigation			Yabucoa, Puerto Rico
0-06			ico Sun Oi logisi/Engin		_	Oriller			Orilling Contractor
roject No.		Néstor M				Constancio Olivo			Іаса & Ѕіегта
ate Started		Date Com			I	orilling Method			Sampler type
6/25/96	-	6/25/96			3	3.25" ID - 6.00" OD Hollow	Stem Aug	ет :	2"x 24" Carbon Steel Split Spoo
Depth		Reco-	Blow				Soil Descri	•	
bgl	USCS	very	Counts	PID					nless otherwise noted.
(ft.)	Symbol	(per 24")	(per 6")	(ppm)			sorting, moist		
0					0-12 1	t. Drilled without collecting	g samples.	Cutt	ings was described as: Silty
					clay to	o clayey silt. Dark grey to b	lack with b	iolo	gical degradation odor.
				19					
12 13	ML	24	1-1-2-3			ft. Clay. Stiff, slightly moi 6/3) mottles.	ist, grey (Gl	ey1,	6/N) with light yellowish brow
14	SM	24	3-4-3-4	0	14-16	ft. Sand to sandy silty clay	. Loose to l	hard	, saturated to slightly moist,
	Sample C				light ;	yellowish brown (2.5Y6/3) z. mica. pyrite.and lithic fra	to grey (Glagments var	eyl, ying	6/N). Sand composed of in size from fine to coarse.
1.5		\blacksquare			-	nalysis sample collected	_	•	
16					Borin	g terminated.			
						Soil Descriptions*			
Туре		Size (mm)	Gravel	Sym	Sil	t & Clay S	ym	
	Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic
			4.8-19	little fines	GP	poorly graded gravel lov		AL.	silts and very fine sand
iravel	19-75				GM	sand, silt, gravel mix lov	w plast (L	gravelly, sandy, silty clay
	19-75 2.0-4.8	.43-2.0	.08043	some fines	Civi				
and		.43-2.0		some fines			gh plast.	ИΗ	micaceous/diatomaceous
and ilt & clay	2.0-4.8		.08043	some fines		sand,clay,gravel,mix hig		MH CH	micaceous/diatomaceous high plasticity clay
and ilt & clay	2.0-4.8 very loose	loose	.08043 <.08 med. dense	some fines	GC	sand,clay,gravel,mix hig			
and ilt & clay oil density	2.0-4.8 very loose dense	loose very dens	.08043 <.08 med. dense	some fines Sand no fines	GC SW	sand,clay,gravel,mix highig highwell graded gravelly	gh plast (high plasticity clay
iravel iand iilt & clay ioil density	2.0-4.8 very loose	loose	.08043 <.08 med. dense	some fines Sand no fines	GC SW SP	sand,clay,gravel,mix high high high well graded gravelly poorly graded gravelly lov	gh plast. (ЭН	high plasticity clay Organic

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New York, New York 10012 Geologic Boring Log

							1	Disp	osal Area SWMU 40
Boring ID	9	Client:				Project:			Location
0-07		Puerto R	Rico Sun C	il Compa	ny	RCRA Facility Investigat	tion		Yabucoa, Puerto Rico
roject No.		AMAI Ge	ologist/Engi	песг		Driller			Drilling Contractor
		Gustavo	Felipe			Constancio Olivo			Jaca & Sierra
ate Started		Date Com	pleted			Drilling Method			Sampler type
6/25/96		6/2	5/96			3.25" ID - 6.00" OD Holl		_	2"x 24" Carbon Steel Split Spoon
Depth		Reco-	Blow				Soil Desc	ript	ion
bgl	USCS	very	Counts	PID		Descriptions ma	de from auger cu	ttings	s, unless otherwise noted.
(fl.)	Symbol	(per 24")	(per 6")	(ppm)		(grain :	size, sorting, mo	sture	, color/hue etc.)
0	SM			0.7	0-2 f	t - Silt and clay mixture -	trace gravel a	nd r	ock fragments. Product odor.
-					No v	isible contaminants. Dry -	- Hue 7.5YR	3/3 c	dark brown.
1.2						•			
1									
2	SM			0.9	2_4 f	t - Same as above. Little p	araduct ador	Hue	7 5 YR 3/3 dark brown.
2	SIVI]	0.9	2 -7 1	t - Sairie as above. Dittie ş	product odor.	1140	, 1.5 110 5,5 talk 010 111.
3									
4	SM			0.0	4-8 f	t - Same as above.			
5									
						,			
6									
7			1						
•			1						
8	SP			57.5	2. 10	ft -Sand and silt trace roo	ck fragments.	and	gravel. Strong product odor.
0	31		1	37.5		al contaminants. Black tar			
•			1			5Y 4/2 Olive gray.	-iike product	*****	in damings.
9			1		nue	31 4/2 Offive gray.			
			1						
10	ML	24"	2-3-2-2	97.3	10-1	2 ft - Same as above.			
11									
			[28			
12	SP		2-3-3-3	98.5		3 ft - Top of spoon. Well			
	Sam	ple Colle	ected		prod	uct. Moist. Hue 5Y 4/2 O	live gray. Ful	l ana	alysis sample collected
13					13-1	4 ft -Bottom of spoon. Cla	ay dense high	pla	sticity. Visible product contami-
		V	<u> </u>		natio	n. Strong product odor. H	lue Chart 1 fo	r gle	ey 4/10 Y Dark greenish gray.
14	СН	24"	4-4-6-7	111.0	14-1	6 ft - Clay - same as aboy	e. Visible cor	ıtam	ination. Black tar-like product
17				22110		,			•
	L					Soil Descriptions*			
	1	61 ()		C1	C		Silt & Clay S	Sym	
Туре		Size (mm)		Gravel	Sym		SIII & CHIY E	yuu	I
	Coarse	Medium	Fine	no fines	GW	well graded gravel	, , 1.		Inorganic
Gravel	19-75		4.8-19	little fines	GP	poorly graded gravel		ИL	silts and very fine sand
and	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix		:L	gravelly,sandy,silty clay
ilt & clay			<.08	some fines	GC	sand,clay,gravel,mix	high plast.	ИН	micaceous/diatomaceous
oil density	very loose	loose	med. dense	Sand			high plast.	CH	high plasticity clay
•	dense	very dense		no fines	sw	well graded gravelly			Organic
Angularity	very ang.		sub angular		SP		low plast.)L	silty clay low plasticity
		rounded	well round	some fines	SM			ЭН	clay med, to high plasticity
	sub round also in blows							rT	humus,swamp soils, organic
		CTOOL SPOY	_	some fines	M.	INDUCTOR OF THE PROPERTY OF TH	IS CALL		

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Geologic Boring Log

			-					Disposal Area SWMU 40
Boring 1D	•	Client:			Project:			Location
40-08			Rico Sun			ity Inve	stigation	Yabucoa, Puerto Rico
Project No	D.	AMAI Ge	ologist/En	gineer	Driller			Drilling Contractor
		Gustavo	Felipe	_	Constancio (Jaca & Sierra
Date Star	ted	Date Com	pleted		Drilling Metho	d		Sampler type
6/26/96		6/26/96			3.25" ID - 6.	.00" OD	Hollow Stem	2"x 24" Carbon Steel Split Spoon
Depth		Reco-	Blow					
bgl	USCS	very	Counts	PID			Soil Des	cription
(ft.)	Symbol		(6" each)	(ppm)			grain size, sorting, me	pisture, color/hue etc)
0	GM	(par y	, ,	0.4	0-4 ft Sand and g			ilt, no visible contamination
1					Very dry, Hue 10		•	•
1					., .,,,		*:	
·								
2								
- 1							+	
3								
ا '								
4	SC			1.9	4. 6 ft Sandy silt	trace of	av little or no ora	vel or rock fragments
7	30			1.7				ng product odor, Dry,
ا ي					Hue 7.5 YR 3/3 d			is product odor, 213,
5				\name{\text{i}}	110e /.5 1K 5/5 0	OIF VIO	711	
_). AT			3.9	6.10 B C:11 am 2	سدا ، امر	le or no recust co	rock fragments, strong
6	ML			3.9		•	-	
_					product odor, and		-	gs.
7					Hue chart #1 for g	gley, 2.5	N black	
_							5	
8								
9								
						_		
10	ML		i	0.0	10-12 ft Same as	above ta	r-like product mi	ked in cuttings
11								
12	СН	24"	1-2-4-4	3.7		-	•	organic clay (red mottles)
l	Sample o	ollected						g product odor, Saturated at
13					15 ft, Hue chart 1	_	•	
					Drill to 22 ft and i			ing well point
14		V			Full analysis sam	ple colle	cted.	
					End boring			
					Well Cons	structio	n Details	- 10
Casing m	terial		Screen slo	t size	Screen Interval		Filter Pack	Cap Type
2"X Sch	edule 40	PVC	0.020	inch	12-22 ft		No. 2 Silica sand	Watertight cap
	asing/mank				Lock type:	,		
None		l			None			
Notes:						*		
							-	· · · · · · · · · · · · · · · · · · ·
					Well Dev	/elonma	nt Data	
					Well Dev	ciohine	III IJALA	IV.
Date:		Technique			# (A # 1 * 1 * 1 * 1 * 1 * 1 * 1 * 1 * 1 * 1			Volume purged:
3/8/96					5/8" high density p			55 gal
	Temp		SC (µ			•	SC- specific cond	luctance
nitial:	2:		27:		6.01		lear after purging	
Final:	2.	5	27	70	5.89	Well dr	ies at 5 gpm	

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Well Log

Northeast Refinery Area

Well ID:	Client:			Pro	ject:	Location:
		- C Oi	C			lity Investigation Yabucoa, Puerto Rico
40-09 Project No			Company		Iler:	Drilling contractor:
rojectiv					nstancio	
Date Start	Gustavo F ted: Date Compl				lling Meth	
	-					0" OD Hollow Stem Auger None
6/26/96	6/26/96				.5 IL~0.	
Depth		USCS		Blow		Soil Description
٠,	Well Construction	symbol	Recovery	Counts	PID	Descriptions made from auger cuttings unless otherwise noted
n			(per 24 ")	(6" ea)	(ppm)	(grain size, ** hue/color, moisture, sorting etc.)
					4.7	
0 1		OL	8		0,0	0-2 ft Sandy silt little or no gravel, no rock fragments, Organic rich soil. No visible contamination, Dry. Hue 7.5 YR 3/3 Very dark brown
3		OL			3.7	2-4 ft Silt and clay - dense high plasticity. Little or no gravel. strong product odor- visible free product, Dry Hue 7.5 YR 2.5/1 Black
4		OL			7.5	4-6 ft Same as above
5 6 7 8 9		СН			78.6	6-8 ft Clay dense high plasticity. Little or no gravel, or sand. Visible contamination. Gray Saturated at approximately 8 ft. Drill to 13 ft and install 2" PVC Monitoring well.
	Key to v Standing W.L. Land surface	well cons Bottom of End cap Bentonite	borehole	Well cas	sing	Auger tip has dense gray clay at tip (13 ft)

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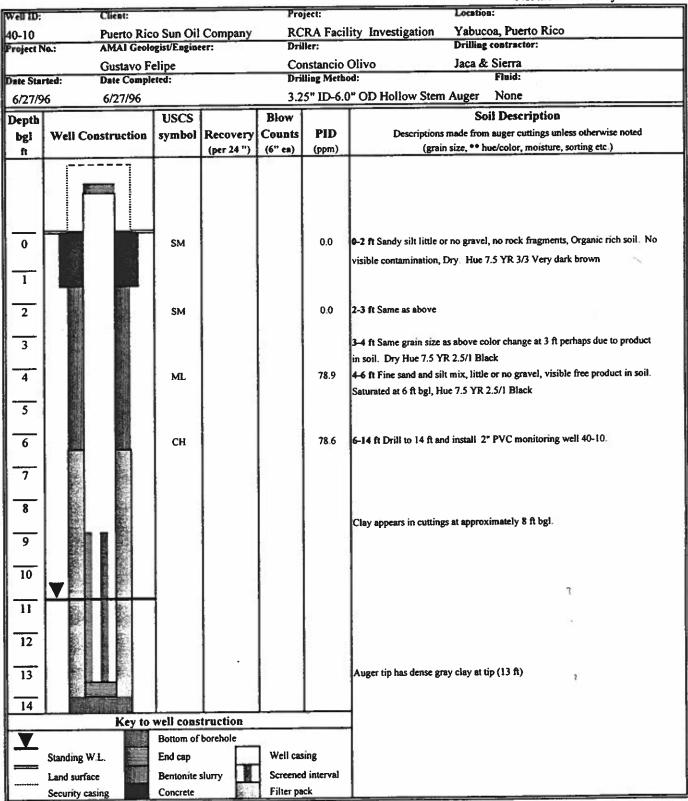
Well Log (continued)

									111	ortheast Refinery Area
Location		Client:				Project:			Proje	ct number
		Puerto R	Rico Sun Oi	I Company		RCRA Facil				
Depth	USCS	Reco-	Blow					oil Descript		
bgl	Symbol	very	Counts	PID						s otherwise noted
(ft)	(ppm)	(per 24")	(6"ea)	(ppm)			(grain size, **	hue/color, mois	ture, so	orting etc.)
3				Wel	Con	struction De	etails			
Casing materia			Screen slot s		Con	struction Do	etails	Screen Interv	nl	Bottom
2" schedule	40 PVC		Screen slot si		Filter	psck 2 Silica Sand		Screen Interv 8.0-13.0 ft	al .	Bottom Well point
2" schedule Security casing	40 PVC g/manhole:		0.020	inch	Filter	pack 2 Silica Sand Lock type:			nl .	
Casing materia 2" schedule Security casing Above groun	40 PVC g/manhole: nd 36" galv		0.020	inch	Filter	psck 2 Silica Sand			nl .	
2" schedule Security casing Above groui	40 PVC g/manhole:		0.020	inch	Filter	pack 2 Silica Sand Lock type:			al	
2" schedule security casing Above groui	40 PVC g/manhole: nd 36" galv		0.020	inch ive casing	Filter No.	pack 2 Silica Sand Lock type: American			gl	
2" schedule Security casing Above groun Notes:	40 PVC g/manhole: nd 36" galv		0.020 teel protecti	inch ive casing	Filter No.	pack 2 Silica Sand Lock type:				
2" schedule Security casing Above groun Notes:	40 PVC g/manhole: nd 36" galv Watertigh	t cap Techniqu	0.020 teel protecti	inch ive casing We	Filter No.	pack 2 Silica Sand Lock type: American) Data		Volus	Well point
2" schedule Security casing Above groun Notes:	40 PVC g/manhole: and 36" galv Watertigh	Techniqu Centrifu	0.020 teel protecti	inch ive casing We	Filter No.	pack 2 Silica Sand Lock type: American velopment I) Data		Volus	Well point me purged: allons
2" schedule Security casing Above groun Notes: Date: 7/22/96	40 PVC g/manhole: nd 36" galv Watertigh	Techniqu Centrifu	e: SC(ize inch ive casing We esing 5/8" hig	Filter No.	pack 2 Silica Sand Lock type: American velopment I	Data ylene hose. Notes:	8.0-13.0 ft SC- specific or	Volus	Well point me purged: allons
2" schedule Security casing Above groun Notes: 7/22/96	40 PVC g/manhole: nd 36" galv Watertigh	Techniqu Centrifu	e: sc()	ive casing We ssing 5/8" high system) 39	Filter No.	pack 2 Silica Sand Lock type: American velopment I nsity polyeth pH 6.44	Data ylene hose. Notes: Pumping ra	SC- specific on the 1.5 gpm	Volus 40 g	Well point me purged: allons ance
2" schedule Security casing Above groun Notes:	40 PVC g/manhole: nd 36" galv Watertigh	Techniqu Centrifu	e: sc()	we casing We sing 5/8" higher sing 5/8"	No.	pack 2 Silica Sand Lock type: American velopment I nsity polyeth pH 6.44 6.49	Data ylene hose. Notes: Pumping ra Viscous bla	8.0-13.0 ft SC- specific or	Volus 40 g	Well point me purged: allons
2" schedule security casing Above groun Notes: 7/22/96 Initial:	40 PVC g/manhole: nd 36" galv Watertigh	Techniqu Centrifu (c)	e: sc (2	we casing We sing 5/8" higher sing 5/8"	No.	pack 2 Silica Sand Lock type: American velopment I nsity polyeth pH 6.44	Data ylene hose. Notes: Pumping ra Viscous bla	SC- specific on the 1.5 gpm ck product in	Volum 40 g onducta	Well point me purged: allons
2" schedule Security casing Above groun Notes: Date: 7/22/96	40 PVC ymanhole: nd 36" galv Watertigh Temp 25	Techniqu Centrifu (c) S Size (mm	e: sc (2 2	we casing We ssing 5/8" higher sing 5/8	Filter No. :	pack 2 Silica Sand Lock type: American velopment I nsity polyeth pH 6.44 6.49 Description	Data ylene hose. Notes: Pumping ra Viscous bla	SC- specific on the 1.5 gpm	Volus 40 g	well point me purged: allons uncc
2" schedule Security casing Above groun Notes: 7/22/96 Initial: Type	40 PVC symanhole: nd 36" galv Watertigh Temp 25 Coarse	Techniqu Centrifu (c)	e: sc() 2 Fine	we casing We sing 5/8" high system Gravel no fines	Filter No. : No. : By det Sym GW	pack 2 Silica Sand Lock type: American velopment I nsity polyeth pH 6.44 6.49 Description well graded gra	Data ylene hose. Notes: Pumping ra Viscous bla s	SC- specific on the 1.5 gpm ck product in Silt & Clay	Volum 40 g onducts n well	me purged: allons ance
" schedule security casing Above groun lotes: 7/22/96 Initial: Type	Temp 24 Coarse 19-75	Techniqu Centrifu Co(c) Size (mm	e: gal pump u SC (2 Fine 4.8-19	we casing We sing 5/8" his ps/cm) 39 20 Gravel no fines little fines	Filter No. : Ill De ch de *Soil Sym GW GP	pack 2 Silica Sand Lock type: American velopment I nsity polyeth pH 6.44 6.49 Description well graded gra poorly graded g	Data ylene hose. Notes: Pumping ra Viscous bla s avel	SC- specific on the 1.5 gpm ck product in Silt & Clay	Volum 40 g onducta n well Sym	well point me purged: allons ance Inorganic silts and very fine sand
2" schedule security casing Above groun lotes: 7/22/96 Initial: Type Gravel	40 PVC symanhole: nd 36" galv Watertigh Temp 25 Coarse	Techniqu Centrifu (c) S Size (mm	0.020 teel protecti e: gal pump u SC (2 2) Fine 4.8-19 .08043	we casing We sing 5/8" his ps/cm) 39 20 Gravel no fines little fines some fines	Filter No	pack 2 Silica Sand Lock type: American velopment I nsity polyeth pH 6.44 6.49 Description well graded gra poorly graded gra sand.silt.gravel	Data ylene hose. Notes: Pumping ra Viscous bla s avel gravel mix	SC- specific on the 1.5 gpm ck product in Silt & Clay low plast.	Volum 40 g onducts n well	me purged: allons ance
" schedule ecurity casing Above groun lotes: 7/22/96 nitial: Type Gravel sand silt & clay	Temp 2: Coarse 19-75 2.0-4.8	Techniqu Centrifu (c) S Size (mm Medium	0.020 teel protecti e: gal pump u SC (2 2) Fine 4.8-19 .08043 <.08	we casing We sing 5/8" his ps/cm) 39 20 Gravel no fines little fines some fines some fines	Filter No	pack 2 Silica Sand Lock type: American velopment I nsity polyeth pH 6.44 6.49 Description well graded gra poorly graded g	Data ylene hose. Notes: Pumping ra Viscous bla s avel gravel mix	SC- specific of te 1.5 gpm ck product in Sitt & Clay low plast. high plast.	Volum 40 g onductz n well Sym ML CL MH	well point me purged: allons ance Inorganic silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous
" schedule ecurity casing Above groun lotes: 7/22/96 nitial: Type Gravel in de clay	Temp 2: Coarse 19-75 2.0-4.8	Techniqu Centrify (c) Size (mm Medium) 43-2.0	0.020 teel protecti e: gal pump u SC (2 2) Fine 4.8-19 .08043 <.08 med dense	we casing We sing 5/8" high sing 5/8" high sing 5/8" high sing sing sing sing sing sing sing sing	Filter No. : Ill De *Soil Sym GW GP GM GC	pack 2 Silica Sand Lock type: American velopment I nsity polyeth pH 6.44 6.49 Description well graded gra poorly graded g sand,silt,gravel sand,clay,grave	Pumping ra Viscous bla s avet gravel mix el,mix	SC- specific on the 1.5 gpm ck product in Silt & Clay low plast.	Volum 40 g onducta n well Sym	me purged: allons ance Inorganic silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay
" schedule ecurity easing Above ground total: 7/22/96 nitial: Type Gravel cand citt & clay soil density	Temp 22 Coarse 19-75 2.0-4.8 very loose dense	Techniqu Centrifu (c) Size (mm Medium 43-2.0 loose very dense	0.020 teel protecti e: ngal pump u SC (1 2 2) Fine 4.8-19 .08043 <.08 med dense	we casing We sing 5/8" high sing 5/	Filter No. : Ill De *Soil Sym GW GP GM GC SW	pack 2 Silica Sand Lock type: American velopment I nsity polyeth pH 6.44 6.49 Description well graded gra poorly graded g sand,silt,gravel sand,clay,grave well graded gra	Data ylene hose. Notes: Pumping ra Viscous bla s avet gravel mix el,mix avetly	SC- specific or te 1.5 gpm ck product in Silt & Clay low plast. high plast. high plast.	Voluti 40 g onducts n well Sym ML CL MH CH	Well point me purged: allons ance Inorganic silts and very fine sand gravelly sandy, silty clay micaceous/diatomaceous
" schedule ecurity casing Above groun lotes: 7/22/96 nitial: Type Gravel	Temp 25 Coarse 19-75 2.0-4.8 very loose dense very ang.	Techniqu Centrifu (c) Size (mm Medium .43-2.0 loose very dense angular	e: gal pump u SC (2 Fine 4.8-19 .08043 <.08 med. dense c sub angular	we casing We sing 5/8" high sylvesty s	Filter No. : No. : *Soil Sym GW GP GM GC SW SP	pack 2 Silica Sand Lock type: American velopment I nsity polyeth pH 6.44 6.49 Description well graded gra poorly graded gra sand,silt,gravel sand,clay,grave well graded gra poorly graded gra	Data ylene hose. Notes: Pumping ra Viscous bla s avel gravel mix cl,mix avelly gravelly	SC- specific or te 1.5 gpm ck product in Silt & Clay low plast. low plast. high plast. high plast. low plast.	Volum 40 g onductz n well Sym ML CL MH	me purged: allons ance Inorganic silts and very fine sand gravelly sandy silty clay micaceous/diatomaceous high plasticity clay Organic
" schedule ecurity easing Above ground bove ground lotes: 7/22/96 nitial: Type iravel and dilt & clay soil density	Temp 2: Coarse 19-75 2.0-4.8 very loose dense very ang. sub round	Techniqu Centrifu (c) S Size (mm Medium .43-2.0 loose very dense angular rounded	e: gal pump u SC (2 2) Fine 4.8-19 .08043 <.08 med. dense c sub angular well round	we casing We sing 5/8" high sing 5/	*Soil Sym GP GM GC SW SP SM	pack 2 Silica Sand Lock type: American velopment I nsity polyeth pH 6.44 6.49 Description well graded gra poorly graded g sand,silt,gravel sand,clay,grave well graded gra	Data Pylene hose. Notes: Pumping ra Viscous bla s avet gravel mix el,mix avetly gravelly ly-silt	SC- specific or te 1.5 gpm ck product in Silt & Clay low plast. high plast. high plast.	Voluti 40 g noducta n well Sym ML CL MH CH	me purged: allons ance Inorganic silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic silty clay low plasticity

611 Broadway Suite 907 G New York, New York 10012

Well Log

Northeast Refinery Area



611 Broadway Suite 907 G New York, New York 10012

Well Log (continued)

		Northeast	Refinery	Агеа
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							 :			theast Refinery Area
Location		Client:				Project:			Proje	ect number
Yabucoa, P.I		Puerto P	Rico Sun Oi	l Company		RCRA Facil	lity Investiga			
Depth	USCS	Reco-	Blow	:				oil Descript		•
bgl	Symbol	vегу	Counts	PID		,	•	-		ss otherwise noted
(ft)	(ppm)	(per 24")	(6"en)	(ppm)			(grain size, **	hue/color, mois	ture, so	orting etc.)
					Э					
		;								
2" schedule Security casing	40 PVC	onized c	Screen slot s 0.020	ize inch	Filter	2 Silica Sand Lock type:	I	Screen Interv 9.0-14.0 ft		Bottom Well point
Casing materia 2" schedule Security casing Above groun Notes:	40 PVC		0.020	ize inch	Filter	pack 2 Silica Sand Lock type:		9.0-14.0 ft		
2" schedule Security casing Above groun	40 PVC z/manhole: nd 36" galv		0.020	inch ive casing	Filter No. 2	pack 2 Silica Sand Lock type:	l eyed-alike (a	9.0-14.0 ft	dy)	Well point
2" schedule Security casing Above groun	40 PVC z/manhole: nd 36" galv		0.020 teel protecti	inch ive casing	Filter No. 2	pack 2 Silica Sand Lock type: American k	l eyed-alike (a	9.0-14.0 ft	dy)	
2" schedule Security casing Above groun Notes:	40 PVC manbole: nd 36" galv Watertigh	Techniqu	0.020 teel protecti	inch ive casing	Filter No. 2	pack 2 Silica Sand Lock type: American ke	l eyed-alike (a Data	9.0-14.0 ft	volui	Well point
2" schedule Security casing Above groun Notes:	40 PVC g/manhole: and 36" galv Watertigh	Techniqu Centrifu	0.020 teel protecti e:	ize inch ive casing We asing 5/8" high	Filter No. 2	pack 2 Silica Sand Lock type: American ke	l eyed-alike (a Data	9.0-14.0 ft	Volui 35 g	Well point me purged: allons
2" schedule Security casing Above groun Notes: Date: 7/22/96	40 PVC g/manhole: nd 36" galv Watertigh	Techniqu Centrifu	e: gal pump u	ive casing We using 5/8" hig	Filter No. 2	pack 2 Silica Sand Lock type: American ke velopment I nsity polyeth pH	eyed-alike (a Data Data Dylene hose.	9.0-14.0 ft luminum bo SC- specific or	Volui 35 g	Well point me purged: allons
2" schedule Security casing Above groun Notes: 7/22/96	40 PVC ymanhole: nd 36" galv Watertight	Techniqu Centrifu	e: gal pump u SC (ive casing We asing 5/8" higher sing 5/	Filter No. 2	pack 2 Silica Sand Lock type: American ke velopment I nsity polyeth pH 5.33	eyed-alike (a Data Pylene hose. Notes: Pumping ra	9.0-14.0 ft luminum bo SC- specific or te 1.0 gpm	Voluti 35 g	Well point me purged: allons
2" schedule Security casing Above groun Notes: Date: 7/22/96	40 PVC g/manhole: nd 36" galv Watertigh	Techniqu Centrifu	e: gal pump u SC (we casing We asing 5/8" higher black blac	No. 2	pack 2 Silica Sand Lock type: American ke velopment I nsity polyeth pH 5.33 5.31	eyed-alike (a Data ylene hose. Notes: Pumping rai Viscous bla	9.0-14.0 ft luminum bo SC- specific or	Voluti 35 g	Well point me purged: allons
2" schedule Security casing Above groun Notes: 7/22/96 Initial: Final:	40 PVC ymanhole: nd 36" galv Watertight	Techniqu Centrifu	e: gal pump u SC (we casing We asing 5/8" hip µS/cm) 600	Filter No. 2	pack 2 Silica Sand Lock type: American ke velopment I nsity polyeth pH 5.33	eyed-alike (a Data ylene hose. Notes: Pumping rai Viscous bla	9.0-14.0 ft duminum bo SC- specific co te 1.0 gpm ck product in	Volum 35 g onducts	Well point me purged: allons
2" schedule security casing Above groun Notes: 7/22/96	40 PVC g/manhole: nd 36" galv Watertight	Techniqu Centrifu (c) Size (mm	e: gal pump u SC (we casing We asing 5/8" higher highe	Filter No. 2 II De Sh der	pack 2 Silica Sand Lock type: American ke velopment I nsity polyeth pH 5.33 5.31 Description	eyed-alike (a Data ylene hose. Notes: Pumping rai Viscous blass	9.0-14.0 ft luminum bo SC- specific or te 1.0 gpm	Voluti 35 g	Well point me purged: allons ance
2" schedule ecurity casing Above groundes: 7/22/96 initial: Type	40 PVC ymanbole: nd 36" galv Watertigh Temp 25 25	Techniqu Centrifu	e: gal pump u SC (10	we casing We asing 5/8" high system 600 640 Gravel no fines	Filter No. 2 II De gh dei Sym GW	pack 2 Silica Sand Lock type: American ke velopment I nsity polyeth pH 5.33 5.31 Description well graded gra	eyed-alike (a Data Pylene hose. Notes: Pumping ra Viscous bla s	9.0-14.0 ft luminum bo SC- specific of te 1.0 gpm ck product in	Volum 35 g onducts n well	well point me purged: allons ance
" schedule ecurity casing Above groundotes: 7/22/96 mitial: Type	40 PVC ymanbole: nd 36" galv Watertigh Temp 25 25 Coarse 19-75	Techniqu Centrifu (c) Size (mm	e: gal pump u SC (10 Fine 4.8-19	we casing We asing 5/8" higher between the simulation of the simu	Filter No. 2	pack 2 Silica Sand Lock type: American ke velopment I nsity polyeth pH 5.33 5.31 Description well graded grapoorty graded graded	eyed-alike (a Data Paylene hose. Notes: Pumping rai Viscous bla s svei gravet	9.0-14.0 ft luminum bo SC- specific co te 1.0 gpm ck product in Silt & Clay low plast.	Volum 35 g onduction well	well point me purged: allons ance Inorganic silts and very fine sand
" schedule ecurity casing Above groundets: 7/22/96 nitial: Type Gravel	40 PVC ymanbole: nd 36" galv Watertigh Temp 25 25	Techniqu Centrifu (c) Size (mm	0.020 teel protecti e: gal pump u SC (10 10 Fine 4.8-19 .08-043	we casing We asing 5/8" hig µS/cm) 600 640 Gravel no fines little fines some fines	Filter No. 2 II De *Soil Sym GP GM	pack 2 Silica Sand Lock type: American ke velopment I nsity polyeth pH 5.33 5.31 Description well graded gra poorty graded gra pand, silt, gravel	eyed-alike (a Data Paylene hose. Notes: Pumping rai Viscous blais sevel gravel mix	9.0-14.0 ft luminum bo SC- specific or te 1.0 gpm ck product in Silt & Clay low plast. low plast.	Volum 35 g n well Sym	well point me purged: allons ance Inorganic silts and very fine sand gravelly,sandy,silty clay
Preschedule security casing Above ground total: 7/22/96 Type Gravel sand sin & clay	Temp 25 25 Coarse 19-75 2.0-4.8	Techniqu Centrifu (c) Size (mm Medium	0.020 teel protecti e: gal pump u SC (10 Fine 4.8-19 .08043 <.08	we casing We asing 5/8" higher highe	Filter No. 2	pack 2 Silica Sand Lock type: American ke velopment I nsity polyeth pH 5.33 5.31 Description well graded grapoorty graded graded	eyed-alike (a Data Paylene hose. Notes: Pumping rai Viscous blais sevel gravel mix	9.0-14.0 ft luminum bo SC- specific co te 1.0 gpm ck product in Silt & Clay low plast. low plast. high plast.	Volum 35 g Sym ML CL MH	me purged: allons ance Inorganic silts and very fine sand gravelly sandy silty clay micaceous/diatomaceous
Preschedule security casing Above ground total: 7/22/96 Type Gravel sand sin & clay	40 PVC ymanbole: nd 36" galv Watertight Temp 25 25 Coarse 19-75 2.0-4.8 very loose	Techniqu Centrifu (c) Size (mm Medium 43-2.0	e: gal pump u SC (10 Fine 4.8-19 .08043 <.08 med.dense	we casing We asing 5/8" high size some fines some fines Sand	Filter No. 2 III De *Soil Sym GW GP GM GC	pack 2 Silica Sand Lock type: American ke velopment I nsity polyeth pH 5.33 5.31 Description well graded gra poorly graded gra pand,silt,gravel sand,clay,grave	eyed-alike (a Data Puplene hose. Notes: Pumping rai Viscous blais avel gravel mix el,mix	9.0-14.0 ft luminum bo SC- specific or te 1.0 gpm ck product in Silt & Clay low plast. low plast.	Volum 35 g n well Sym	me purged: allons ance Inorganic silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay
" schedule ecurity casing Above groundes: 7/22/96 nitial: Type Gravel Sand Soil density	Temp 25 Coarse 19-75 2.0-4.8 very loose dense	Techniqu Centrifu (c) Size (mm Medium .43-2.0 loose very dense	e: gal pump u SC (10 Fine 4.8-19 .08043 <.08 med.dense	we casing We asing 5/8" high s/cm) 600 640 Gravel no fines little fines some fines some fines some fines no fines	Filter No. 2 III De *Soil Sym GW GP GM GC SW	pack 2 Silica Sand Lock type: American ke velopment I nsity polyeth pH 5.33 5.31 Description well graded gra poorly graded gra sand,silt,gravel sand,clay,grave well graded gra	eyed-alike (a Data Data Dylene hose. Notes: Pumping rai Viscous blans sevel gravel mix el,mix	9.0-14.0 ft duminum bo SC- specific or te 1.0 gpm ck product in Silt & Clay low plast. low plast. high plast.	Voluit 35 g Sym ML CL MH CH	me purged: allons ance Inorganic silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic
2" schedule security casing Above ground tes: 7/22/96 Initial: Type Gravel Sand Soil density	Temp 25 25 Coarse 19-75 2.0-4.8 very loose dense very ang.	Techniqu Centrifu (c) Size (mm Medium .43-2.0 loose very dense angular	e: gal pump u SC (10 Fine 4.8-19 .08043 <.08 med. dense sub angular	we casing We asing 5/8" higher sing 5/8	Filter No. 2 III De *Soil Sym GW GP GM GC SW SP	pack 2 Silica Sand Lock type: American ke velopment I nsity polyeth pH 5.33 5.31 Description well graded gra poorly graded gra sand,silt,gravel sand,clay,grave well graded gra poorly graded gra poorly graded gra poorly graded gra poorly graded gra poorly graded gra poorly graded gra	eyed-alike (a Data Pylene hose. Notes: Pumping rai Viscous bla s svel gravel mix cl,mix avelly gravelly	9.0-14.0 ft duminum bo SC- specific or te 1.0 gpm ck product in Silt & Clay low plast. high plast. high plast. low plast.	Voluments of the second of the	me purged: allons ance Inorganic silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic silty clay low plasticity
2" schedule security casing Above groun Notes: 7/22/96 initial: Final:	Temp 25 25 Coarse 19-75 2.0-4.8 very loose dense very ang. sub round	Techniqu Centrifu (c) Size (mm Medium .43-2.0 loose very dense angular rounded	e: gal pump u SC (10 Fine 4.8-19 .08043 <.08 med.dense	we casing We asing 5/8" high s/cm) 600 640 Gravel no fines little fines some fines some fines some fines no fines	Filter No. 2 III De *Soil Sym GW GP GM GC SW	pack 2 Silica Sand Lock type: American ke velopment I nsity polyeth pH 5.33 5.31 Description well graded gra poorly graded gra sand,silt,gravel sand,clay,grave well graded gra	eyed-alike (a Data Pylene hose. Notes: Pumping rai Viscous bla ss svel gravel mix el,mix avelly gravelly y-sit	9.0-14.0 ft duminum bo SC- specific or te 1.0 gpm ck product in Silt & Clay low plast. low plast. high plast.	Voluit 35 g Sym ML CL MH CH	me purged: allons ance Inorganic silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic

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Geologic Boring Log

Northeast Refinery Area

Boring 1D)	Client:	(T)		Project:	·		Location Location		
40-11			Rico Sun	Oil Co.		lity Inve	stigation	Yabucoa, Puerto Rico		
Project N	0.	AMAI G	ologist/En	gineer	Driller			Drilling Contractor		
		Nestor I	Rivera		Constancio	Olivo		Jaca & Sierra		
Date Star	ted	Date Con	pleted		Drilling Meth	od		Sampler type		
7/18/96		7/18/96			3.25" JD - 6	.00" OE	Hollow Stem	2"x 24" Carbon Steel Split Spoon		
Depth		Reco-	Blow							
bgl	USCS	very	Counts				Soil Des	3 °		
(ft)	Symbol	(per 24")		(ppm)			(grain size, sorting, mo			
0	CL	8"	2-3-4-5	0		•	•	coarse quartz, mica, pyrite, and		
Ι. Ι							•	nite fragments observed		
'	,	1			Hue 10 YR 4/4 d	ark yelic	owish brown			
2	CL	16"	3-3-5-4	0	2-4 ft Same as a	hove co	me rock fragments	coheaned		
	CL	10	J-J-J-J		2-4 It Saine as a	00vc, so	ine rock magnitude	obscived		
3	!									
	,	1								
4	CL	18"	3-4-4-4	0	4-6 ft Same as ab	ove (tor	12")			
]		[•	n odor, Hue #1 for gley 2.5/1 10 GY		
5					greenish black ar	d #1 for	gley 2.5/N Black			
6	SM	18"	3-3-3-2	0						
					(mostly fine) visible product in soil, hydrocarbon odor, moist, loose roots					
7		_			Hue #1 for gley 2.5/N black					
١. ١		100		_						
8	SM	12"	1-2-2-1	0	8-10 ft same as a	bove, w	et to saturated			
ا ۾ ا					Dailles 10 A Lat			itaning walt maint		
9					i	anu insu	all temporary mon	noring wen point		
					!			•		
	i				ļ					
ΙΙΙ										
100					1					
18			8		18 ft End boring					
				1						
					Well Con	structio				
Casing ma			Screen slo		Screen Interval		Filter Pack	Cap Type		
2"X Schedule 40 PVC 0.020 inch 8-18 ft							No. 2 Silica sand	Watertight		
-	asing/manh		1 - '		Lock type:					
	ding galva				American	t- 0 0	A h-1			
Notes:	riiter pac	K 0-18 ft	ogi - (rout 2-	-6 ft bgl - cond	rete 0-2	ıı oğı			
					257-22 %		nd Dada			
					Well De	velopme	ent Data			
Date:		Technique			e/on L: L 1 '-	a le seri	lana harr	Volume purged:		
7/22/96	T				5/8" high density			55 gal		
laisia)	Temp		SC (μ:		pH 6 en		SC- specific cond			
Initial: Final:	2:		223		6.80 6.83		pproximately .5 gr oduct in water	DIN		
1 11141.	2.		220	J. (7	0.03	1. rec pro	Jouet III Walti			

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Geologic Boring Log

Northeast Refinery Area

Da-4 P*		Cli			Dealers.		Northeast Reinery Area					
Boring II	J	Client:	niaa Oo	0:1.0	Project:	lia. Immatin et e						
40-12	-		Rico Sun			Yabucoa, Puerto Rico Drilling Contractor						
Project N	io.		eologist/En	gineer	Driller							
7		Nestor I			Constancio	Jaca & Sierra						
Date Star		Date Con			Drilling Meth	Sampler type						
7/18/96		7/18/96			3.25" ID - 6	.00" OD Hollow Stem	2"x 24" Carbon Steel Split Spoon					
Depth		Reco-	Blow									
bgl	USCS	very	Counts	!		escription						
(ft)	Symbol	(per 24")	(6" each)	(ppm)			moisture, color/hue etc.)					
						slightly moist, stiff, fine	• · · · · · · · · · · · · · · · · · · ·					
						and, roots, no stains no	odor,					
1 Hue 10 YR 4/4 dark yellowish brown												
	٠,	000		5-6-13 0 2-4 ft Same as above, some lignite fragments observed								
2	CL	20"	-5-6-13	"	2-4 It Same as ac	ove, some lignite tragme	ents observed					
]									
3												
	514	10"	8-8	0	4.6 ft Silby sound	lightly majet madium 6.	ne to coarse quartz					
4	SM	Ι "	10-13	٧	1 '	slightly moist medium fir						
10-13 mica, pyrite, and lithic sand, lignite fragments observed Hue 10 YR 4/4 dark yellowish brown.						iens observed, no stants no odor						
						e to 1 K 4/4 daik yenowish blown.						
6	SM	24"	4-4-5-3	0	6.8 ft Same as ah	8 ft Same as above with red mottles (mottles hue 7.5 R 3/4 dusky red)						
ľ	3141	2			0-0 It Saine as au	same as above while red mothes (mothes fide 7.3 K 3/4 dusky red)						
7					•							
'			li									
8	SM	18"	3-4-3-5	0	8-10 A Sandy sile	elightly majet soft Rot	ttom 6" has hydrocarbon odor					
°	2141	10	3-4-3-3	v	_		m greenish quartz, mica pyrite					
9						<u> </u>	d 5Y 3/N very dark gray					
					and name state, i	ac 10 11(4/5 0/04/11, all	d 21 3/14 voly dank gray					
10	SM	18"	3-4-3-5	0	10-12 ft Silty san	d to sand, wet, some free	e product observed					
10			, , , , ,		•		tz, mica, pyrite, and lithic sand					
11						/N very dark gray.						
l ''					, , , , , , , , , , , , , , , , , , ,							
12	SM	10"	1-1-1-2	0	12-14 ft Sand to	silty sand, saturated, loos	se, visible product and					
~~		1		_		, Hue #1 for gley 4/1 10	-					
13					I *	- Silty clay soft wet, no s						
						/1 5GY dark greenish gr	1					
14						emical analysis sample,	·					
						monitoring point at 15 fl	t bgl					
		Well Construction Details										
Casing ma	aterial		Screen slo	t size	Screen Interval	Filter Pack	Cap Type					
		vc	10.7	inch	5-15 ft	1111	d Watertight cap					
	2" Schedule 40 PVC 0.020 inch Security casing/manhole:				Lock type:	1						
36" standing galvanized steel casing				3	American							
	Filter pac					rete 0-2 ft bgl	· · · · · · · · · · · · · · · · · · ·					
			-		*		•					
					Well Dev	elopment Data						
Date: Technique:						Volume purged:						
					30 gallons							
1	Temp		SC (µS			Notes: SC- specific con						
Initial:	25		3C (μ.		6.60	Yield approximately .5						
							5hin					
Final: 25 890 6.44 Free product in water												

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Geologic Boring Log

Page 1	of 2				Geologic Botting Dog	Northeast Refinery Area						
Boring I	ID	Client:			Location							
40-13		Puerto	Rico Sun	Oil Co	o. RCRA Facility Investigation Yabucoa, Puerto Rico							
Project !	No.	AMAI (eologist/E	ngineer								
			M. River	a	Constancio Olivo	Jaca & Sierra						
Date Sta	rted	Date Co	mpleted		Drilling Method	Sampler type						
7/19/96	5	7/19/96	5		3.25" ID - 6.00" OD Hollow Stem	2"x 24" Carbon Steel Split Spoon						
Depth		Reco-	Blow									
bgl	USCS	very	Counts	PID	Soil De	scription						
(ft)	Symbol	(per 24")	(6" each)	(ppm)		noisture, color/hue etc.)						
0	CL	18"	1-2-3-4	0	0-2 ft Sandy silt, slightly moist, stiff, fine							
					mica, pyrite, and lithic sand, no stains no							
					Hue 10 YR 4/4 dark yellowish brown	-						
1				1	,							
	ł	ŀ										
	!	l										
2	CL	20"	2-2-4-4	0	2-4 ft Silty clay, stiff and slightly moist, ro	ots and lignite						
	1				No stains no odor	-						
					Hue 7.5 YR 4/4 brown							
3												
			1 1									
4	CL	24"	4-5-5-5	0	4-6 ft Silty clay, stiff and slightly moist, oi	stains on roots and in void spaces						
					Hue #1 for gley 5/N gray and 3/1 5GY darl	k greenish gray						
]]									
5												
_			1 1									
6	CL	24"	4-5-5-5	0	6-8 ft Same as above firm sandy clay lens 7	7-7.5 bgl (wet)						
ایا			ľ									
7												
- 1					24							
		0.45										
8	CL	24"	2-1-2-3		8-10 ft Same as above, sandy layers within	a clay matrix, which have visible						
					free product, sand is wet							
9												
7												
- 1	l											
10	CL/SP	20"	3-3-3-4	0	10-12 ft Sand to conduction for the							
	CL/SF	20	J-J-J-4	ا	10-12 ft Sand to sandy clay, fine to coarse of	quartz, mica, pyrite and lithic sand						
	1				loose to soft, moist to wet, visible free produ	uct in sand and sandy clay						
11				1								
		Į	- 1									
	ŀ											
12	CL	18"	1-1-1-4	0	12-14 & Condu ploy and maintain and the	1- C						
		10	,-1-1	٧	12-14 ft Sandy clay, soft moist to wet, visib	Je Tree product in sand and sandy clay						
	1	l			Fine to coarse quartz, mica, pyrite, and lithic							
13	- 1	- 1		ľ	Hue #1 for gley 5/N gray and 3/1 5 GY dark	greenish gray						
.												
		ŀ	- 1	ľ								
			1									
- 1	- 1	- 1		- 1								

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Geologic Boring Log

	• \		60		Geologic Doi	b ~~b	Northeast Refinery Area					
Continu		Page 2 o	f 2		Project:		Location Location					
Boring ID	,	Client:	dan O	0:1.0-	RCRA Facility Investigation Yabucoa, Puerto Rico							
0-13			lico Sun			Driller Drilling Contractor						
roject N			ologist/En									
			1. Rivera		Constancio Olivo Jaca & Sierra Drilling Method Sampler type							
ate Star	ted	Date Con	pleted		Drilling Method							
/19/96		7/19/96			3.25" ID - 6.00	OD Hollow Ste	em 2"x 24" Carbon Steel Split Spoon					
Depth		Reco-	Blow									
bgl	USCS		Counts	127			oil Description					
(ft.)	Symbol	(per 24°)	(6" each)				rting, moisture, color/hue etc.)					
14	CL/SP	21"	3-5-4-5	0			ht hydrocarbon odor in clay,					
·					Fine to coarse quartz							
					Hue #1 for gley 5/N	and 5/1 5GY da	rk greenish gray					
15												
16	CL/SP	24"	4-7-6-5	0	16-18 ft Same as abo	ove						
17												
- 1												
18	CL/SP	24"	2-3-3-3	0	18-20 ft Same as abo	ove						
			i I		1							
					Install temporary monitoring well point at 18 ft bgl							
19					Screen 8-18 ft							
		ŀ										
20		l										
		1										
		1	1		1							
		l										
					·							
				i								
	ŀ	ļ		l	İ							
	l											
	l			•								
	<u>. </u>	1	1	<u> </u>	Well Const	ruction Details						
2	nda=fc®		Screen sle	nt eize	Screen Interval	Filter Pack	Cap Type					
Casing m		DVC	155									
	" Schedule 40 PVC 0.020 inch			men								
Security casing/manhole: 16" standing galvanized steel casing					Lock type: American							
						rete 0-2 ft bgl	- 10					
Notes:	ritter p	аск 6-18	n ogi -	Grou	t 2-6 ft bgl - conc	rete 0-2 it ugi						
			_		337-11 35	Janmant Data						
					Well Deve	lopment Data						
Date:		Techniqu					Volume purged:					
7/19/96		Centrifi			5/8" high density pol		55 gallons					
	Ten	np (c)	SC (µ	S/cm)	pH N	otes: SC-specif	ic conductance					
Temp (c) SC (μS/cm) Initial: 25 1200					6.07 Hydrocarbon odor in purge water							
Initial:		25	12	.00	6.07 H							

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Geologic Boring Log

•	Well	installed	1	ft	from	boring	14a
---	------	-----------	---	----	------	--------	-----

Northeast Refinery Area

• Well i	nstalled	I ft from	boring 1	4a				Northeast Refinery Area						
Boring 10)	Client:			Project:			Location						
10-14		Puerto F	tico Sun	Oil Co.	RCRA Facility Invest	Yabucoa, Puerto Rico								
Project N	o.	AMAI G	ologist/En	gineer	Driller			Drilling Contractor						
		Nestor N	۸. Rivera	1	Constancio Olivo		Jaca & Sierra							
ate Star		Date Con		•	Drilling Method Sampler type									
7/29/96		7/29/96			3.25" ID-6.00" OD Hollow Stem Auger 2"x 24" Carbon Steel Split Spoon									
Depth		Reco-	Blow											
bgl	USCS	vегу	Counts	PID	<i>©</i>	Soi	il Descr	iption						
(ft)	Symbol	-	(6" each)	(ppm)	(sture, color/hue etc.)						
0-12	2,1	(pur = 1)		(FF)	0-12 ft Soil as described in									
0-12	_	Ī			0-12 10 50% tas described in	coming io								
1		_												
	CI	15"	1-2-2-3	0	12 14 th Clay to candy clay	clichthum	aiet eaf	ft, locally has fine to medium						
12	CL	13	1-2-2-3	U				fragments, no stains, no odor						
					Hue 10 YR 4/4 brown and	#1 for giey	o/n gray	,						
13														
				_	4446	. 2 . 2 . 4		0. 1						
14	CL	21"	2-2-2-2	0				R, locally sandier, sand consists						
						_		anging in size from fine to medium						
					grained, Hue 1 for gley 6/N	gray, and	Chart #1	for gley 4/Ndark gray						
15				16										
		ŀ												
16	CL	N/R	3-3-4-4	0				sh yellow (7.5 YR 7/8) mottles						
			<u> </u>		locally sandier, sand compo	osed of Qua	rtz, mic	a, pyrite, and lithic						
					fragments, ranging in size t	from fine to	coarse	grained,						
17					Hue chart #1 for gley 6/N g	gray to brow	n 7.5Y	R 4/3						
]											
18			1		End boring and install temp	orary moni	itoring v	vell point at 18 ft						
					screen 8-18 ft									
	ĺ													
19			1											
		1												
		1												
20														
20			[
								1						
		<u> </u>	1		Well Construction	n Details								
			la .					Can Tura						
Casing m			Screen sk		-	ilter Pack		Cap Type						
	dule 40		0.020	inch		No. 2 Silica	sand	Watertight cap						
•	casing/ms				Lock type:									
36 " stai	nding ga	Ivanized	steel cas	ing	American			1						
Notes:														
	53		KG.											
					Well Developm	ent Data								
Date:		Techniqu	ie:			Vo	lume pu	rged:						
3/19/96				using	5/8" high density polyethyle			20 gallons						
		ip (c)	SC (µ			C- specific								
nitial:		6.1	3C (μ		6.19									
				30	6.03									
inal:		5.0	1 30) U	0.03									

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Geologic Boring Log

Northeast Refinery Area

<u> </u>									Northeast Refinery Area	
Boring ID		Client:				Project:		100	Location	
40-14a			Rico Sun C		my	RCRA Facility Investiga	ation	(95)	Yabucoa, Puerto Rico	
Project No.			cologist/Eng	ineer	Driller Drilling Contracto					
Day Charles		Date Con	M. Rivera		Constancio Olivo Jaca & Sierra Drilling Method Sampler type					
Date Started 7/19/96		7/19/96	-			Tripod			18"/24" Carb Steel Split Spoot	
		Reco-	Blow	Γ		Tilpou	Soil Descr			
Depth	USCS		Counts	PID		Descriptions made		50	nless otherwise noted.	
bgl		very				•	e, sorting, mois	_		
(ft)	Symbol CL	(per 24") 14"	(per 6") 2-2-4-5	(ppm)	0.24					
0	CL	'-	2-2-4-3	ľ	0-2 ft - Sandy silt, stiff, slightly moist, fine to coarse quartz, mica, pyrite, sa Roots, no stains no odor,					
			ŀ	ŀ	Hue 10 YR 3/5 dark yellowish brown					
1					וחמב	10 1 K 3/3 dark yellowis	II biowii			
•			2245	1		Some se shave with a	-d a+taa a4	Flean (Ovida	
2	CL	14"	2-3-4-5	0		t - Same as above with re	ea moutes of	i iron (Oxide	
			İ		Hue	7.5 YR 3/4 dark brown				
3		l								
4	CL	18"	3-3-5-5	0	4-61	t -Same as above (2-4 ft))			
		i								
5	l	l			l					
6	CL/SP	24"	6-3-2-3	0					o moist, locally sand layers are	
	Sample o	ollected				rved, fine to coarse quart				
7]		no st	ains no odor, Hue #1 for	gley 5/N gra	ıy and	3/1 5GY dark greenish gray	
					lmm	unoassay sample collecte	ed			
8	SC	8"	5-4-4-7	0	8-10	ft - Clayey sand to sand,	loose wet to	satur	ated, fine to coarse quartz	
					mica	, pyrite, and lithic sand, i	no stains no e	odor r	oots, Black mottles	
9					Hue	5Y 5/N gray (mottles gle	y #1 2.5/N b	lack)		
	ļ									
	ļ				100					
			1		End	boring, grout to surface				
					ŀ					
					l					
			Į.		l					
					l	59				
					l					
	1				l					
					ŀ					
			l							
		L	1			Soil Descriptions*				
Туре	1	Size (mm	`	Gravel	Sym		Silt & Clay	Sym		
- ypc	Coarse	Medium	Fine	no fines	GW	well graded gravel	J C,	[~ J ***	Inorganic	
Gravel	19-75	,TJEG(MM	4.8-19	little fines	GP	poorly graded gravel	low plast	ML	silts and very fine sand	
	2.0-4.8	.43-20	.08043	some fines		sand, silt, gravel mix	low plast.	CL	gravelly, sandy, silty clay	
and	2.0-4.8	.43-20					high plast.	MH	micaceous/diatomaceous	
iilt & clay	ess W	101	<.08	some fines	GC	sand,clay,gravel,mix		-		
		loose	med, dense	Sand	_		high plast.	СН	high plasticity clay	
ioil density	very loose		11							
oil density	dense	very dens		no fines		well graded gravelly	<u> </u>		Organic	
oil density			sub angular			well graded gravelly poorly graded gravelly	low plast.	OL	Organic silty clay low plasticity	
	dense	very dens		little fines	SP		low plast. high plast.	OH OH		

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Geologic Boring Log

		ON :				Destant			Location	
Boring ID		Client:	tico Sun C	il Come-		Project: RCRA Facility Investiga	tion		Location Yabucoa, Puerto Rico	
40-14b			ologist/Engi			Driller	ition		Drilling Contractor	
Project No.			и. Rivera	ucci		Constancio Olivo			Jaca & Sierra	
Date Started		Date Com			Drilling Method Sampler type					
7/19/96		7/19/96	•		Tripod 2"x 18"/24" Carb Steel Split Spoon					
Depth		Reco-	Blow				Soil Des	cripti	OD	
bgl	USCS	very	Counts	PID		Descriptions made	ie from auger c	uttings	unless otherwise noted.	
(ft)	Symbol	(per 24")	(per 6")	(ppm)		(grain s	ize, sorting, mo	isture,	color/hue etc.)	
0	CL	16"	2-2-4-5		0-2 f	t Sandy silt, stiff slightly	moist, fine t	o coa	rse grained sand	
					quari	z, mica, pyrite, and lithic	fragments,	no sta	ins no odor, roots	
1]				Hue	10 YR 4/4 dark yellowish	n brown			
	1									
2	CL	16"	8-8-9-11	0	2-4 f	t Sandy silt, stiff slightly	moist fine to	coar	se, grained quartz,	
_	-	, i				, pyrite, and lithic sand, r				
3				, ,		10 YR dark yellowish bro				
						•				
4	CL	18"	5-6-4-6	0	4-6 f	t Same as above, with da	rk red mottle	s of I	ron Oxide stains,	
· ·	}			-		tles hue 7.5 R 3/4)				
5					,	•				
ľ										
6	CL.	22"	6-6-6-7	0	6-8 f	t Same as above with dar	k red mottle:	s (hue	: 7.5 R 3/4)	
ľ						to coarse Quartz, mica, p				
7	<u> </u>					found at 7' 6" bgl	•		, ,	
'	i				,					
8	ł	ł	8-6-5-5		8-10	ft No recovery				
ľ	Sample o	ollected	10000			unoassay sample collecte	d			
9	оапри с									
		₩ '	1							
10	SP	24"		0	10-1	2 ft				
10	31			ľ			i fine to coar	rse, ai	partz, mica, pyrite and lithic sand	
11	мн					stains, no product odor, k				
l ''	1411					10 YR 4/3 brown	,		• *	
12	SP					ile of spoon (8") - Clay to	sandy clay.	soft :	slightly moist, roots	
12	31					#1 for gley 3/1 5GY dark			,	
						om of spoon (8") - Sand,			coarse quartz, mica	
						e and lithic sand, no stain				
					<u>''''</u> ا				-	
*			Ī		End	boring, grout to surface				
	1		111	· · · · · · · · · · · · · · · · · · ·	·	Soil Descriptions*				
Туре		Size (mm	<u> </u>	Gravel	Sym		Silt & Clay	Sym		
- 17-	Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic	
Gravel	19-75	No. of	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand	
Sand	2.0-4.8	43-20	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly, sandy, silty clay	
Silt & clay		1000 C	<.08	some fines	GC	sand,clay,gravel,mix	high piast.	мн	micaceous/diatomaceous	
Soil density	very loose	loose	med. dense	Sand			high plast.	СН	high plasticity clay	
DON GEBORY	dense	very dense		no fines	sw	well graded gravelly			Organic	
Angularity	very ang.	angular	sub angular		SP	poorly graded gravelly	low plast.	OL	silty clay low plasticity	
Vogeratich	sub round	rounded	well round	some fines	SM	silty-sand sandy-silt	high plast.	ОН	clay med. to high plasticity	
Note - density			<u> </u>	some fines		sand clay mixture	Peat	PT	humus, swamp soils, organic	
THOSE - BEISHY	mide in Did Mg					e Unified Soil Classification Sy	<u> </u>			
					Jouro	Commenter Classification by				

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Geologic Boring Log

* Well installed 1 ft from boring 15a

Location Yabucoa, Puerto Rico Drilling Contractor Jaca & Sierra Sampler type In Auger 2"x 24" Carbon Steel Split Spoon Soil Description Orting, moisture, color/hue etc.)
Drilling Contractor Jaca & Sierra Sampler type m Auger 2"x 24" Carbon Steel Split Spoon Soil Description orting, moisture, color/hue etc.)
Jaca & Sierra Sampler type m Auger 2"x 24" Carbon Steel Split Spoon Soil Description orting, moisture, color/hue etc.) 10-15a
Sampler type In Auger 2"x 24" Carbon Steel Split Spoon Soil Description orting, moisture, color/hue etc.) 10-15a
m Auger 2"x 24" Carbon Steel Split Spoon Soil Description orting, moisture, color/hue etc.) 10-15a
Soil Description orting, moisture, color/hue etc.) 10-15a
Soil Description orting, moisture, color/hue etc.) 10-15a
orting, moisture, color/hue etc.) 10-15a
orting, moisture, color/hue etc.) 10-15a
-0-15a
100
, saturated, composed of quartz,
arying in size from fine to very coarse,
ck
product in void spaces, Hue #1 gley 4/1 10 GY
product in void spaces, rive #1 giey 4/1 10 OT
1 1 1 1 1 1 1 1 1 AA1
hydrocarbon odor, Hue #1 gley 3/N
, moist to wet, visible product
ft slightly moist to moist, sand varies in
of quartz, mica, pyrite and lithic fragments
onitoring well point at 18 ft
ca sand Watertight cap
Volume purged:
Volume purged: 15 gallons
15 gallons
e si

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Geologic Boring Log

						D			Location
Boring ID		Client:		:1 C		Project: RCRA Facility Investigs	ation		Yabucoa, Puerto Rico
40-15a			cico Sun O			Driller	ition		Drilling Contractor
Project No.			ologisti Engl 1. Rivera	neer		Mario Sierra			Jaca & Sierra
Date Started		Date Com				Drilling Method			ler type
7/22/96		7/22/96				Tripod		2"x 1	8"/24" Carb Steel Split Spoon
Depth		Reco-	Blow				Soil Descr	iption	1
bgl	USCS	very	Counts	PID		Descriptions made	from auger cutt	ings, w	nless otherwise noted.
(ft)	Symbol	(per 24")	(per 6")	(ppm)			e, sorting, mois		
0	SP	10"	3-2-1-2-	0	0-2 f				pyrite, lithic, slightly moist,
v	<u> </u>					, no visible contamination			
1			i			•			
7)									
2	SP	16"	3-2-5-6	0	2-4 fi	t - Sand, slightly moist, l	oose, fine to	very o	coarse, Quartz mica,pyrite,
4	, SF	10	3-2-3-0			ithic sand last 6" are silti			
,						10 YR 5/6 yellowish bro			
3					1140	to TR 5/0 Johowish 6/0			
	SM	18"	6-6-6-5	0	A_6 6	t - Sand to silty sand loc	se to dense.	slighti	y moist, fine to coarse quartz,
4	2M	10	0-0-0-3	"		, pyrite and lithic sand, l			
						, pyrite and ridine said, i 10 YR 3/4 yellowish bro			
5					Mac	IO IR 3/4 yellowish oro	WII, I TO Stall		307.
	00					Candy alay fine to co	orce guarta	mica	pyrite, lithic sand, slightly
6	SC	8"	6-6-5-6	0		t, stiff, no stains no odor		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	py1100, 11an 0 = 10, 5118, 111,
_]	·				i, stiff, no stants no odor 10 YR 3/4 dark yellowis		5 VR	4/4 brown
7		ļ			Hue	10 1 K 3/4 dark yellowis	ii brown to 7.	.J 1 K	4/4 0/0WII
						0. 0. 1. 1. 5-4. 6		- mia	s surita lithic cand roots
8	SC	8"	5-4-4-7	0					n, pyrite, lithic sand, roots
	ŀ					sand and layering, no sta		SUIT,	slightly moist to moist,
9		İ			Hue	10 YR 3/4 dark yellowi:	sh brown.		
10	SC	14"	3-4-4-6	0					ca, pyrite, lithic sand, roots
					ľ	k staining and odor, fine		artz ei	tai.
11	ļ				Hue	10 YR 3/4 dark yellowi	sh brown.		
	1			al .				•	
12		16"	6-6-6-6	0	12-1	4 ft - Top of spoon (3") -	sandy clay,	soft to	stiff, slightly moist to moist
		1			Oil s	tains in void spaces. Hue	#1 for gley	5/n gr	ay and 5/1 5GY dark gr. gray
13		▼						l, quar	tz, mica, pyrite, and lithic sand
					soil i	s wet and has visible fre	e product,		
14		ŀ			Botte	om of spoon (9") - same	as above, san	idy cla	y on top
	1				End	boring, grout to surface.	··		
	-	<u> </u>				Soil Descriptions*			
Туре		Size (mm)	Gravel	Sym		Silt & Clay	Sym	
	Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic
Gravel	19-75	Eng	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand
Sand	2.0-4.8	43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly, sandy, silty clay
Silt & clay			<.08	some fines	GC	sand,clay,gravel,mix	high plast.	мн	micaceous/diatomaceous
Soil density	very loose		med. dense	Sand			high plast.	СН	high plasticity clay
Con genard	dense	very dens		no fines	sw	well graded gravelly			Organic
Angulerity		angular	sub angular	little fines		poorly graded gravelly	low plast	OL	silty clay low plasticity
Angularity	very ang	rounded	well round	some fines		silty-sand sandy-silt	high plast.	он	clay med to high plasticity
Note - density	sub round				_	sand clay mixture	Peat	PT	humus, swamp soils, organic
Note - density	aiso in Diows	V OOS J OOLY	=	some fines	اعدا	amin his invinio	T	1	,

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Geologic Boring Log

Boring 10	5	Client:			Project:			Location			
40-16			lico Sun	Oil Co.	-	y Investigation		Yabucoa, Puerto Rico			
Project N	io.		ologist/En		Driller	<u>,</u>		Drilling Contractor			
			1. Rivera		Constancio O	livo		Jaca & Sierra			
Date Star		Date Con		<u> </u>	Drilling Method			Sampler type			
7/30/96		7/30/96			3.25" ID-6.0"	OD Hollow St	em Auger	2"x 24" Carbon Steel Split Spoon			
Depth		Reco-	Blow								
bgl	USCS	very	Counts	PID			Soil Desc	ription			
(ft)	Symbol		(6" each)	(ppm)		(grain size,	sorting, mo	isture, color/hue etc.)			
0	SM	24	1-2-3-3	-				yellowish brown (10YR5/4)			
·					Sand composed of	quartz, mica, p	yrite and li	ithic fragments varying in size			
1					from fine to coarse	. Roots and lig	nite obser	ved.			
2	sc, s	24	4-4-5-6	•		(R5/6). Sand co	mposed o	tly moist, gray (7.5YR5/1) to f quartz, mica, pyrite and lithic			
3					magniciis varying	in size nom im		•			
4	SC, S	24	6-7-5-4	-	(Gley 1, 5/N) to bl	ack (7.5YR2.5/	l) to dark	ose, slightly moist to wet, gray brown (7.5YR3/4). Sand composed varying in size from fine to coarse.			
5	}				Hydrocarbon odor						
6	SC, S	18	4-3-4-3					ghtly moist, dark gray			
v	130, 3	1						a, pyrite and lithic fragments			
7				1	varying in size fro	m fine to coarse	. Hydroca	rbon odor and visible product.			
•					' "						
8	sc, s	24	1-1-2-2	-	4/N) to greenish g	ray (Gley 1, 5/1	,5G). Sand	oist to wet, black (Gley 1, I composed of quartz, mica, pyrite			
9					and lithic fragments varying in size from fine to coarse. Hydrocarbon odor and visible product.						
10	SC,SM	24	1-1-1-2			ay to sand. Soft	to loose, v	wet, grey (Gley 1, 5/N)			
	50,511			l	to greenish gray (C	Gley 1, 5/N). Sa	nd compo	sed of quartz, mica, pyrite			
11					and lithic fragmen visible product.	ts varying in siz	e from fin	e to coarse. Hydrocarbon odor and			
12	SC, S	24	2-2-2-2	l -	12-14 ft. Same as	above.					
	, ,	1 -			1						
13											
14					Boring terminated						
	1				Well Construction Details						
Casing 0	naterial		Screen si	ot size							
	dule 40	PVC	0.020	inch	L						
	casing/m:										
	_		nized cas	ing	American						
Notes:		- 0-1									
					Well De	velopment Dat	a				
Date:		Techniqu	se:	:=			Volume	purged:			
8/14/96				sing 5/8	high density polye	thylene hose.	15 galle	ons			
	_	np (c)		S/cm)		Notes: SC-spe	cific cond	luctance			
Initial:		25		90				y several times during			
Final:		25		00	<u> </u>	development.					
								Decement 6/42/07			

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Geologic Boring Log

								Northeast Refinery Area				
Boring II	D	Client:			Project:			Location				
40-17			Rico Sun			stigation		Yabucoa, Puerto Rico				
Project N	io.	AMAI G	eologist/Er	gineer	Driller Drilling Contractor							
		Néstor l	M. Rivera	1	Constancio Olivo Jaca & Sierra							
Date Star	rted	Date Cor	npleted		Drilling Method			Sampler type				
7/31/96		7/31/96			3.25" ID-6.0" OD H	lollow Ster	n Auger	2"x 24" Carbon Steel Split Spoon				
Depth		Reco-	Blow									
bgl	USCS	very	Counts	PID		!	Soil Desc	ription				
(ft)	Symbol		(6" each)	(ppm)	1			isture, color/hue etc.)				
0	SC	15	2-4-6-7	(PP)				ist, strong brown (7.5YR5/6)				
•	50	'`						(7.5YR6/1). Sand composed				
1	ŀ				· ·			arying in size from fine to				
1	l				coarse. Roots observed.	u nunc na	Ritieries A	arying in size nom time to				
•		20	3-3-3-2			1	م ما دادها	int house (7 SVPS/4) to				
2	SM	20	3-3-3-2	-	2-4 ft. Silty sand to sand.							
_					_		-	ey mottles (7.5YR7/1). Sand				
3							a lithic fi	ragments varying in size from fine				
					to coarse. Roots observed							
4	SM	15	3-3-2-2	-				oft, slightly moist to wet, strong				
						-		d composed of quartz, mica,				
5	ļ	1			pyrite and lithic fragmen							
		1			6-8 ft. Sandy clay. Soft, s	lightly mo	ist to we	, strong brown (7.5YR5/6)				
6	CL	21	2-2-1-2	-	Sand composed of quartz	z, mica, py	rite and I	ithic fragments varying				
		1			in size from fine to coarse	.						
7	1				8-10 ft. Sandy clay to san	d. Soft to	loose, we	t to saturated, strong brown				
·	_	_						posed of quartz, mica, pyrite and				
8	CL, S	22	2-3-4-4	_	lithic fragments varying in			·				
•	CD, 5				10-12 ft. Sandy clay. Soft, slightly moist to wet, dark grey (5Y4/1).							
9					Sand composed of quartz, mica, pyrite and lithic fragments varying							
,					in size from fine to coarse		inc mia i	and nagments varying				
10	CL	18	1-1-1-1	_			ightly m	oist to moist, dark grey (5Y4/1)				
10		10	1-1-1-1	_	_		-	posed of quartz, mica, pyrite				
٠,, ا												
11					and lithic fragments varyi	ing in size	irom iine	to coarse.				
12	CL	24	2-2-1-2	-	1							
13		ļ										
14					Boring terminated.			1				
								-7				
					Well Constructi	on Details	;					
asing m	aterial		Screen slo	t size	Screen Interval	Filter Pack		Cap Type				
" Sched	dule 40 I	PVC	0.020	inch	5-15 ft.	No. 2 Sili	ca sand	Watertight cap				
ecurity (casing/ma	nbole:			Lock type:							
	_		ized casii	ng -	American			7				
otes:	- 6. + 3	8-11-21		3				· · · · · · · · · · · · · · · · · · ·				
	k from 4-1	5 ft Plente	onite seal fe	om 2-4 fl	R. Grout from 0-2 ft.							
paci		aP-510	podi 11	J 2-7 II	Well Developm	ent Data						
		TF			44 cit mexetohii		V-L					
		Techniqu			F/OH 1.1-1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		Volume p					
		II 'Ambriti	gal mumn	using (5/8" high density polyethy!	iene nose.	y) gailor	1S				
3/14/96	Tem	p (c)	SC (µ	S/cm)	pH Notes:	SC- speci	fic condu	ctance				
Nate: 8/14/96 nitial:	Tem			S/cm) 30		SC- speci	fic condu	ctance				

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Geologic Boring Log

								Northeast Refinery Area		
Boring II)	Client:			Project:			Location		
40-18		Puerto F	tico Sun	Oil Co.	RCRA Facil	ity Investigation		Yabucoa, Puerto Rico		
Project N	lo.	AMAI G	ologist/En	gineer	Driller			Drilling Contractor		
		Néstor N		1	Constancio (· · · · · · · · · · · · · · · · · · ·		Jaca & Sierra		
Date Star	rted	Date Con	pleted		Drilling Metho			Sampler type		
7/30/96		7/30/96			3.25"ID-6.0'	'OD Hollow Sten	ı Auger	2"x 24" Carbon Steel Split Spoon		
Depth		Reco-	Blow			Ô				
bgl	USCS		Counts	PID			Soil Desc	-		
(ft)	Symbol	(рег 24")	(6" each)	(ppm)				pisture, color/hue etc)		
0	SM	16	3-4-4-5	-				f, slightly moist, yellowish		
				(3)				z, mica, pyrite, and lithic		
1					fragments varying roots observed.	in size from fine	to very	coarse. Iron oxide staining and		
2	SM, SP	21	3-6-6-6					thtly moist, yellowish		
	'							z, mica, pyrite, and lithic		
3					fragments varying	in size from fine	to very	coarse. Iron oxide staining.		
4	SM	24	4-4-3-4	-				h yellow (10YR6/6) to red		
								, pyrite, and lithic		
5					fragments varying in size from fine to very coarse. Iron oxide staining.					
			1							
6	SM, S	21	4-3-1-2	•				turated to slightly moist,		
		V				-		,5G). Sand composed of quartz,		
7						•		size from fine to very coarse.		
]				Hydrocarbon odo	-				
8	sc	18	2-2-2-3	-	8-10 ft. Sandy clay. Soft, slightly moist, greenish grey (Gley 1, 6/1,5G).					
					Sand composed of quartz, mica, pyrite, and lithic fragments varying					
9					in size from fine to coarse. Hydrocarbon odor and free product.					
10	sc	24	1-1-1-3		10-12 6 Sandy of	lav Stiff clichtlu	maist m	reenish grey (Gley1, 6/1,5G).		
10	اعد	24	1-1-1-3	•				lithic fragments varying		
11								for and free product in voids.		
11					M SIZE HOM THE	to comsc. riyurot				
12	sc	24	2-3-2-2		12-14 ft. Sandy of	lav. Stiff, slightly	moist.	reenish grey (Gley1, 6/1,5G).		
14	"							lithic fragments varying		
13					in size from fine	-	,			
13										
14	sc	18	1-12		14-16 ft. Same as	above.				
.,	~~	"	1-3		Boring terminated at 16 ft.					
		I	<u> </u>	'	Well Construction Details					
Casing II	aterial		Screen sle	ot size	Screen Interval	Filter Pac		Cap Type		
	dule 40	PVC	0.020	inch	5-15 ft.	No. 2 Sil	ica sand	Watertight cap		
	casing/ms			_	Lock type:					
		nd galvar	ized casi	ing	American alumin	um body (key alil	(e)			
Notes:	- 0.00			<u> </u>						
	k 4-15 ft.	Bentonite:	seal 2-4 ft.	Grout 0-2	ft.					
						velopment Data				
Date:		Techniqu	ie:				Volume	purged:		
8/15/96				o usine	5/8" high density p	olyethylene hose				
	_	np (c)		S/cm)	pH	Notes: SC- spec				
Initial:		25		30	6.26	Sheen observed.		1		
ı maı.	Final: 25 1220 6.35									

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Geologic Boring Log

Boring II)	Client:			Project:			Location			
40-19			tico Sun	Oil Co.	RCRA Facility Invest	igation		Yabucoa, Puerto Rico			
Project N	io.		eologist/En		Driller			Drilling Contractor			
		Gustavo			Constancio Olivo			Jaca & Sierra			
Date Star	rted	Date Con			Drilling Method			Sampler type			
8/7/96		8/7/96	•		3.25" ID-6.0" OD Hollow Stem Auger 2"x 24" Carbon Steel Split Spoon						
Depth		Reco-	Blow		[ription			
bgl	USCS	very	Counts	PID	Description			tings, unless otherwise noted.			
(ft)	Symbo!			*****	· ·		9 (9	sture, color/hue etc.)			
0	OL	18"	2-3-2-2	0.0	1			clay, little or no sand or gravel			
					1" of rock fragments, Dry I	Hue 7.5 Y 4/	/3 Brov	wn			
1											
2	SM	22"	8-8-8-8	0.0	2-4 ft - Sand and some silt,	poorly grad	ied san	nd and silt mix, abundant mica and pyrite			
					Dry, no product odor, Hue	light yellow	rish bro	own.			
3						-					
					1						
4	ML	13"	4-6-3-3	0.0	4-6 ft - Top 5" of spoon sa	me as above	, botto	m 8" of spoon - silt and clay, little			
					fine sand, no product odor,	Dry Top 11	l" Satu	rated at tip of spoon, Hue brown			
5					Hue 10.5 YR 4/3 Brown						
					201						
6	ML	12"	2-2-1-2	0.0	6-8 ft - Silty clay and fine	sand, micace	eous, le	ow plasticity, densely packed			
	1		!		spoon Moist at top of spoo	n saturated b	bottom	of spoon, Hue grayish brown			
7			í I		Hue 2.5 Y 4/2 Dark grayis	h brown.					
8	ML	12"	3-1-2-2	0.0	8-10 ft - Top 8" fine sand a	ınd silt, same	e color	as above, low plasticity			
					Bottom 4" coarse sand and silt. Tip of spoon is coarse sand.						
9	1		Í		Saturated throughout, no product odor, Hue light gray.						
10	CH	-	-	0.0		y clay, inorg	ganic, h	nigh plasticity, no product odor			
20					saturated, Hue light gray						
- 11	1			•	TW to be set at 14'; 10' scr	een; 7' riser;	3' stic	k up; 0.020 slot; 2" PVC			
		•									
12											
13											
53											
14											
					Well Constructio	n Detaile					
					· · · · · · · · · · · · · · · · · · ·			C T			
Casing m		DVG	Screen slo			filter Pack No. 2 Silica s		Cap Type			
	dule 40		0.020	inch		Watertight cap					
Security	casing/ms	nhole:			Lock type:						
nt-c	-				<u> </u>	•					
Notes:				•							
					Wall Danatas	nt Data					
					Well Developme						
Date:		Techniqu			CON Link domeir - a board - 1		lume pr	arged:			
			<u> </u>		5/8" high density polyethyle						
	Ten	ıp (c)	SC (µ	S/cm)	pH Notes: S	C- specific	condu	ctance			
Initial:	<u> </u>	<u>-</u>		•	•			70			
Final:		-	L								

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Geologic Boring Log

Boring II)	Client:			Project:		Location Location			
40-20	-		Rico Sun	Oil Co.	RCRA Facility	Investigation	Yabucoa, Puerto Rico			
Project N	io.		eologist/E		Driller		Drilling Contractor			
_		Gustavo			Constancio Oli	ivo	Jaca & Sierra			
Date Star	rted	Date Con			Drilling Method		Sampler type			
8/6/96		8/6/96			3.25" ID-6.00"	OD Hollow Stem Auger	2"x 24" Carbon Steel Split Spoon			
Depth		Reco-	Blow			Soil Desc	riptions			
bgl	USCS	very	Counts	PID	r	Description made from auger co	uttings, unless otherwise noted.			
(fi)	Symbol		(6" each)	(ppm)		(grain size, sorting, mo	pisture, color/hue etc.)			
0	OL			0.0	0-2 ft - Top soil orga	anic rich silt and clay, litt	le or no sand or gravel. No product odor.			
					No visible contamin	ation. Dry Hue brownish	red.			
1										
]							
2	OL			0.0	2-6 ft - Same as abo	ve - highly oxidized red s	soil. Dry			
						*				
3										
4										
5										
6	SM	14"	3-3-3-3	0.0			thly oxidized. No visible contamination.			
					No product odor. Dr	y top of spoon, saturated	at tip of spoon. Hue			
7										
8	SM	18"	3-3-3-4	0.0	l .	ove. Saturated throughou	t, no visible contamination,			
			ŀ		no product odor.					
9										
		ļ					. 101 7 4 114			
10			<u> </u>			silt lenses gray reddish cl	ay at ~12'. Install temporary well			
					point at 16'.					
11										
••										
12										
12							92			
13			i							
1.4										
14										
	L		1		Well Con-	struction Details				
Casin-	atari-1	•	Screen sle	at eize	Screen Interval	Filter Pack	Cap Type			
Casing m	dule 40 l	DVC		inch	08' - 16'	No. 2 Silica sand	Watertight cap			
	casing/ma		0.020	men	Lock type:	140. 2 Silica Saild	· · wideright out			
_	_	innoie: teel secui	rity con		American		-			
Notes:			6'; Grout	0 0'-0 6						
10162:	inter pe	VU -1	v, Gioat	3.0-0.0	·		-			
					Well Des	velopment Data				
Decer	0/10/07	Tacket			Well Det	copinent Data	Volume purged:			
Date:	8/19/96	Techniqu		n neiro	5/8" high density not	vethylene hose	~ 55 gal			
	- T-				5/8" high density poly	otes: SC- specific condu				
174* - 1	7	p (°C)		S/cm)		oles. SC- specific condu	CLAIRCE			
Initial:		25		10	6.44					
Final:		25	77	70	5.95	 	Property 4 6(42/07			

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Geologic Boring Log

West	API	Separator	SWMU	02
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									est API Separator SWMU 02
Boring 1D		Client:				Project:			Location
02-0			tico Sun O			RCRA Facility Investiga	tion		Yabucoa, Puerto Rico
roject No.			ologist/Engi	neer		Driller			Drilling Contractor Jaca & Sierra
			1. Rivera			Mario Sierra			Sampler type
ate Started		Date Com	pleted			Drilling Method Trinod			2"x 24" Carbon Steel Split Spot
7/10/96		7/10/96		DID.		Tripod	Soil Desc		
Depth		Reco-	Blow	PID				-	
bgl	USCS	very	Counts	(ppm)					inless otherwise noted.
(ft.)	Symbol	(per 24")	(per 6°)				ize, sorting, mo		
0	SP, CL	10	2-1-1\12						se to soft, slightly moist, black
				i	(10Y	R2/1) to yellowish brown	n (10YR5/4)	to da	rk reddish gray (5YR4/2)
1	Sample c	ollected			Sand	composed of quartz, mic	a, pyrite, sh	ell and	l lithic fragments varying in
					size f	from fine to coarse. Roof	ts observed.	Immu	noassay sample collected.
2	CL	18	2-2-2-3	2	2-4 f	t. Sandy silt. Soft, slightly	y moist to m	oist, y	ellowish brown (10YR5/4)
_					Sand	composed of quartz, mic	a, pyrite, sh	ell and	I lithic fragments varying in
3	Sample o	ollected	1 1			from fine to coarse. Imm			
•	Cumpie .							_	
4	SP	24	3-3-2-2	3	4-6 f	t. Silty sand, Loose, mois	st to saturate	d, yell	owish brown (10YR5/4)
7	31	-			Sand	composed of quartz, mig	ea. pyrite, sh	ell and	l lithic fragments varying in
			<u> </u>			from fine to coarse.	,		•
5					3120	non the to come.			
					Domi	ng terminated.			
6					DOLL	ig terminated.			
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		<u> </u>	<u> </u>			0.00			
					_	Soil Descriptions*	0114 6 67	c	
Туре		Size (mm		Gravel	Sym		Silt & Clay	Sym	Language
	Coarse	Medium	Fine	no fines	GW	well graded gravel	 	1.7	Inorganic
Gravel	19-75	(1) (1)	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand
and	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly sandy silty clay
ilt & clay	第 公司	起接近。	<.08	some fines	GC	sand,clay,gravel,mix	high plast.	МН	micaceous/diatomaceous
oil density	very loose	loose	med. dense	Sand			high plast.	СН	high plasticity clay
	dense	very dens		no fines	sw	well graded gravelly			Organic
ngularity	very ang	angular	sub angular			poorly graded gravelly	low plast.	OL	silty clay low plasticity
referently.	sub round	rounded	well round	some fines		silty-sand sandy-silt	high plast.	ОН	clay med. to high plasticity
		ELORINGCO.	I wen tound	**************************************			,	1	
lote - density		Bank akar		some fines	SC	sand clay mixture	Peat	PT	humus,swamp soils, organic

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Geologic Boring Log

									est API Separator SWMU 02
Boring ID		Client:				Project:			Location
02-0)2	Puerto R	lico Sun O	il Compa		RCRA Facility Investigation	tion		Yabucoa, Puerto Rico
roject No.		AMAI Ge	ologist/Engi	реег		Driller			Drilling Contractor
			1. Rivera			Mario Sierra			Jaca & Sierra
ate Started		Date Com	pleted			Drilling Method			Sampler type
7/12/96		7/12/96				Tripod	574		2"x 24" Carbon Steel Split Spor
Depth		Reco-	Blow	PID			Soil Desci	-	
bgl	USCS	very	Counts	(ppm)					anless otherwise noted.
(ft.)	Symbol	(per 24")	(per 6°)				ze, sorting, moi		
0	ML	18	5-8-2-3						brown (10YR5/6). Sand
	-				comp	osed of quartz, mica, pyr	ite, and lithic	c frag	ments varying in size
1					from	fine to coarse. Full analy	yses and imm	nunoa	ssay samples collected.
•	Sample c	ollected							
2	SM	20	5-5-4-3	1	2-4 fl	t. Silty sand. Loose, moi	st. vellowish	brow	m (10YR5/4). Sand
2	J SIVI		3-3-4-3	•	COMP	nosed of quartz, mica, nyr	rite, shell and	i lithi	c fragments varying in size
_		V			Comp	fine to coarse. Full analy	ucec and imp	aunos	ssay samples collected
3	Sample c	ollected			TLOM	ime to coarse. Full allaly	Ases with Hilli	iuilva	Day Sumples Concess.
							T	4	wiff convented vellowich
4	SP, SM	18	2-4-10-1	3	4-6 f	t. Silty to gravelly sand to	sand. Loos	se (0 S	stiff, saturated, yellowish
					prow	n(10YR5/4) to greenish §	gray (Gley I,	4/1,10	GY). Sand composed of
5	Sample c	ollected			quart	z, mica, pyrite, shell and	lithic fragme	ents v	arying in size from fine to
			ì		coars	e. Gravel composed of qu	uartz and ign	eous	rock fragments.
6		;			Full :	analyses and immunoassa	y samples co	ollect	ed.
•						ng terminated.			
						-			
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	<u> </u>	<u> </u>	<u> </u>			Soil Descriptions*			
T	<u> </u>	Sine (mm		Gravel	Sym		Silt & Clay	Sym	
Туре	G	Size (mm		no fines	GW	well graded gravel			Inorganic
	Coarse	Medium	Fine		_		low plast:	ML	silts and very fine sand
Gravel	19-75	2 (3.5)	4.8-19	little fines	GP	poorly graded gravel		CL	gravelly,sandy,silty clay
Sand	2.0-4.8	.43-2.0	.08043	some fines	_	sand,silt,gravel mix	low plast		micaceous/diatomaceous
Silt & clay	建造学	是式中华	<.08	some fines	GC	sand,clay,gravel,mix	high plast.	МН	
Soil density	very loose	loose	med. dense	Sand	<u> </u>		high plast.	СН	high plasticity clay
-	dense	very dens	e	no fines	SW	well graded gravelly			Organic
Angularity	very ang.	angular	sub angular	little fines	SP	poorly graded gravelly	low plast	OL	silty clay low plasticity
							high place	он	clay med, to high plasticity
zngolet ith	sub round	rounded	well round	some fines	1 2M	silty-sand sandy-silt	high plast.	Un	ciay med, to mgn practions
Note - density	sub round	rounded	well round	some fines		silty-sand sandy-silt sand clay mixture	Peat	PT	humus,swamp soils, organic

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Geologic Boring Log

						_		W	est API Separator SWMU 02
oring ID		Client:				Project:			Location
02-0			ico Sun O			RCRA Facility Investigation	tion		Yabucoa, Puerto Rico
roject No.			ologist/Engi	песг		Driller			Drilling Contractor Jaca & Sierra
			1. Rivera			Mario Sierra Drilling Method			Sampler type
ate Started		Date Com	pleted			Tripod			2"x 24" Carbon Steel Split Spoo
7/12/96		7/12/96	Dien	PID		Проц	Soil Descr		
Depth		Reco-	Blow	1		Description made		-	mless otherwise noted
bgl	USCS	very	Counts	(ppm)			ze, sorting, mois		
(ft.)	Symbol	(per 24")	(per 6")	- 5	0.2.6				ish brown (10YR5/6). Sand
0	SM	22	2-2-4-5	ا '	0-2 II	nced of martz mica nvi	ite shell and	lithia	fragments varying in size
						fine to coarse. Roots obs		200000	-,-,-,-
1		. 11 4 4				analyses and Immunoassa		llecte	ed
_	Sample o				7 2 5	ft. Silty sand. Loose, sli	ightly moist	hrow	n (10YR 5/3) Sand
2	SM	12	2-2-2	6	<i>L-3.</i> 3	H. Silly saild. Loose, sil	ignity moist, i	liski	c fragments varying in size
	Sample o	ollected		1	comp	Seed of quartz, mica, pyr	rice, Silcii aliu	colle	Med
3					rom	fine to coarse. Immunoas	soas sambies	عالم - ادمه	rellowich brown (10VD 5/2)
		18		4	3.5- 5	.5 It. Silty sand to sand.	LUOSE, SEIUIR	icu, y	rellowish brown (10YR5/3)
4			5-5-4		to da	rk greenish gray (Gley 1,4	#1, IVOY) 10	011V(s gray (3 i 3/2). Sand
	Sample o	ollected							c fragments varying in size
5					from	fine to coarse. Immunoa	ssay samples	cone	cted.
6					Borii	ng terminated.			
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	10								
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	1								
	<u> </u>	L				Soil Descriptions*			
	7	0) (Gravel	Sym	Son Descriptions	Silt & Clay	Sym	7
Туре	 	Size (mm)			<u> </u>	well graded gravel	<u> </u>	- 5	Inorganic
	Coarse	Medium	Fine	no fines		poorly graded gravel	low plast.	ML	silts and very fine sand
Gravel	19-75	200	4.8-19	little fines	-	sand, silt, gravel mix	low plast.	CL	gravelly,sandy,silty clay
and	2 0-4 8	.43-2.0	.08043	some fines		sand,clay,gravel,mix	high plast.	MH	micaceous/diatomaceous
	25 17 1 - 317	TANK!	<.08	some fines	GC	Sand, Clay, gravel, mix		СН	high plasticity clay
			and the same of	ISand	1	ł	high plast.	ŲΠ	mgn plasticity clay
	very loose		med. dense						Organic
	very loose dense	loose very dens	e	no fines	-	well graded gravelly		01	Organic
Silt & clay Soil density Angularity				no fines little fines	SP	poorly graded gravelly	low plast.	OL	silty clay low plasticity
Soil density	dense very ang. sub round	very dens angular rounded	sub angular well round	no fines	SP SM		low plast. high plast. Peat	OL OH PT	

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Geologic Boring Log

									Vest API Separator SWMU 02
Boring ID		Client:	•			Project:			Location
02-0	4		lico Sun C			RCRA Facility Investiga	tion		Yabucoa, Puerto Rico
Project No.			ologișt/Engi	neer		Driller			Drilling Contractor
			1. Rivera			Mario Sierra Drilling Method			Jaca & Sierra Sampler type
Date Started		Date Com	pietea			Tripod			2"x 24" Carbon Steel Split Spoon
7/12/96		7/12/96	Blow	PID		riipou	Soil Des		
Depth	TICCC	Reco-				Description mad		_	unless otherwise noted.
bgl	USCS	very	Counts	(ppm)			ize, sorting, mo		
(ft.)	Symbol	(per 24")	(per 6")	1	0.26				ish brown (10YR5/6). Sand
0	SM	14	14-6-5-4						c fragments varying in size
	S-mmle e					fine to coarse. Immunoa			
1	Sample c	OHECTER			TI OUI	Title to compe. Intiliation	souy sumpro.	, 00110	V
•	63.4	,,	222	1	2 2 4	ft. Sand. Loose, moist t	o wet vellos	wich h	rown (10VR5/4) Sand
2	SM	12	2-2-2	1					c fragments varying in size
	Sample o					fine to coarse. Immunoa			
3		*			irom	nne to coarse. Immunoa	ssay (and du	pricau	samples conected.
4					Bon	ng terminated.			
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		ŀ	Y		163				
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	1								
	<u></u>			L.,		Soil Descriptions*			
Туре	<u> </u>	Size (mm		Gravel	Sym		Silt & Clay	Sym	
1 ypc	Coarse	Medium	Fine	no fines	GW	well graded gravel		, ,	Inorganic
Gravel	19-75	Medium	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand
Sand	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay
	2.0-4.8	23-2.0	<.08	some fines	GC	sand,clay,gravel,mix	high plast.	МН	micaceous/diatomaceous
Silt & clay		1			├~	James, Clay, Bratel, Hills	high plast.	СН	high plasticity clay
Soil density	very loose	loose	med. dense		6331	well and at according	miku higar	ļen ļ	Organic
	dense	very dens		no fines		well graded gravelly	low steet	OL	silty clay low plasticity
Angularity	very ang	angular	sub angular			poorly graded gravelly	low plast.	1	clay med. to high plasticity
12.7	sub round	rounded	well round	some fines		silty-sand sandy-silt	high plast.	OH	humus,swamp soils, organic
Note - density	also in blows	/foot abov		some fines	_	sand clay mixture	Peat	PT	numus,swamp sons, organic
				•	Sourc	e Unified Soil Classification Sy	stem.		

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Geologic Boring Log

									est API Separator SWMU 02
Boring ID		Client:		 		Project:	. •		Location
02-0)5		cico Sun C			RCRA Facility Investiga	tion		Yabucoa, Puerto Rico
Project No.			ologist/Eng	incer		Driller			Drilling Contractor Jaca & Sierra
			1. Rivera			Mario Olivo			Sampler type
Date Started		Date Com	pleted			Drilling Method Tripod			2"x 24" Carbon Steel Split Spoot
7/12/96		7/12/96	Blow	PID			Soil Desc		
Depth	11000	Reco-				Description made		-	unless otherwise noted.
bgł	USCS	very	Counts	(ppm)			ze, sorting, moi		
(ft.)	Symbol	(per 24")	(per 6")	_	0.2.6	t. Gravelly to silty sand to			
0	SP, SM	18	5-3-3-4						(R3/4). Sand composed of
	- 1			7	brow	II (101 K5/0) to tack yell	lithic from	ente v	arying in size from fine to
1									
	Sample				coars	e. Full analyses and imm	unoassay sa	mbies	heave (10VP 5/4) to
2	SM	18	3-6-9-12	1	2-4 1	t. Sand. Loose, wet to sa	nurated, yell	DWISH	t of mosts mice sprite shell
									d of quartz, mica, pyrite, shell
3		▼				ithic fragments varying is			
	Sample o	ollected				analyses and immunoass	ay samples o	collec	ted.
4					Borii	ng terminated.			•
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		<u> </u>	<u></u>						
						Soil Descriptions*	I	-	
Туре		Size (mm		Gravel	Sym		Silt & Clay	Sym	
	Coarse		Fine	no fines		well graded gravel		ls =	Inorganic See send
Gravel	19-75	200	4.8-19	little fines	_	poorly graded gravel	low plast.	ML	silts and very fine sand
Sand	2.0-4.8	.43-2.0	.08-,043	some fines		sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay
Silt & clay			<.08	some fines	GC	sand,clay,gravel,mix	high plast.	MH	micaceous/diatomaceous
Soil density	very loose		med. dense	Sand			high plast.	СН	high plasticity clay
	dense	very dens		no fines	sw	well graded gravelly			Organic
Angularity	very ang.	angular	sub angular		SP	poorly graded gravelly	low plast.	OL	silty clay low plasticity
Augustrity		rounded	well round		SM	silty-sand sandy-silt	high plast.	ОН	clay med. to high plasticity
77	sub round				_		Peat	PT	humus,swamp soils, organic
Note - density	also in blov	vs/foot abov	ve	some fines	SC	sand clay mixture	1 586	1	managa manp sons, s.g.

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Geologic Boring Log

									est API Separator SWMU 02
Boring ID	-	Client:				Project:			Location
02-0)6		Cico Sun C			RCRA Facility Investiga	tion		Yabucoa, Puerto Rico
roject No.			ologist/Eng	ineer		Driller			Drilling Contractor
			M. Rivera			Mario Sierra	2.4		Jaca & Sierra Sampler type
ate Started		Date Com	pleted			Drilling Method			2"x 24" Carbon Steel Split Spoot
7/12/96		7/12/96	(g)	TOTAL		Tripod	Soil Desc		
Depth		Reco-	Blow	PID				_	
bgl	USCS	very	Counts	(ppm)					unless otherwise noted.
(ft.)	Symbol	(per 24")					ize, sorting, mo		
0	SM	14	4-3-2-2			t. Silty sand. Loose, slig			
	Sample c	ollected							ed of quartz, mica, pyrite,
1					•	and lithic fragments vary		rom 1	ine to coarse.
						unoassay samples collect			
2	SM	20	3-5-5-12	0		t. Sand. Loose, wet, yello			
									ca, pyrite, shell and lithic
3		l ▼			fragr	nents varying in size fror	n fine to coa	rse.	
	Sample o	ollected			Imm	unoassay samples collect	ted.		
4	•				Bori	ng terminated.			
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	<u>. </u>	-				Soil Descriptions*			
Туре	T	Size (mm))	Gravel	Sym		Silt & Clay	Sym	
- 7 Pc	Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic
Gravel	19-75	7	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand
	2.0-4.8	43-2.0	08- 043	some fines	GM	sand,silt,gravel mix	low plast	CL	gravelly,sandy,silty clay
and	20-4.8	:43*2.0	<.08	some fines	GC	sand,clay,gravel,mix	high plast	мн	micaceous/diatomaceous
ilt & clay		16512			1.50	Julio, Clay, Bravel, IIIA		сн	high plasticity clay
ioil density	very loose		med. dense		6337		high plast.	Cit	Organic
	dense	very dens	·	no fines	SW	well graded gravelly		lo,	
Angularity	very ang	angular	sub angular		-	poorly graded gravelly	low plast.	OL	sitty clay low plasticity
	sub round	rounded	well round	some fines	-	silty-sand sandy-silt	high plast.	ОН	clay med to high plasticity
lote - density	also in blows	s/foot abov	c	some fines	SC	sand clay mixture	Peat	PT	humus,swamp soils, organic

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Geologic Boring Log

								1	West API Separator SWMU 02
Boring ID	····	Client:				Project:			Location
02-0	07		Rico Sun (ıny	RCRA Facility Investiga	ation		Yabucoa, Puerto Rico
Project No.			eologist/Eng	ineer		Driller			Drilling Contractor
		Gustavo				Mario Sierra			Јаса & Ѕіетта
ate Started		Date Con				Drilling Method			Sampler type
7/12/96	1	7/12/96	-	DID	ſ	Tripod	Call Dag		2"x 24"/18" Carbon St Split Spoo
Depth	1	Reco-	Blow	PID			Soil Des	-	
bgl	USCS	very	Counts	(ppm)					, unless otherwise noted.
(ft.)	Symbol	(per 24")					size, sorting, m		
0	GM	18	5-3-3-5	0					ry dark gray (10YR3/1) to
	Sample of	collected	į						ica, pyrite, shell and lithic
1		1			_	ments varying in size from	m fine to coa	rse. Li	nmunoassay samples
	1					ected.			
2	SC	18	4-3-3-5	0		•). Sand composed of quartz,
]		ŀ		mica	, pyrite, shell and lithic f	ragments var	ying .	in size from fine to coarse.
3		₩			Imm	unoassay samples collect	ted.		
	Sample o	collected							
4			1		Вогі	ng terminated.			
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	İ	<u> </u>	<u> </u>			0.415			
						Soil Descriptions*			
Туре		Size (mm)	·	Gravel	Sym		Silt & Clay	Sym	
	Coarse		Fine	no fines	GW	well graded gravel			Inorganic
irave!	19-75	是这个	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand
and	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay
ilt & clay		STATE OF	<.08	some fines	GC	sand,clay,gravel,mix	high plast.	мн	micaceous/diatomaceous
-	very loose	loose	med, dense	Sand			high plast.	СН	high plasticity clay
oil density				no fines	sw	well graded gravelly	· · · · · · · · · · · · · · · · ·		Organic
oil density	dence	very dece		- are allines I	U 77	I Or Drawn Drawni)			
	dense	very dens	Y		Q2	poorly graded gravelly	low plact	lor I	silty clay low plasticity
	very ang.	angular	sub angular	little fines	SP	poorly graded gravelly	low plast.	OL	silty clay low plasticity
Soil density Angularity Note - density	very ang. sub round	angular rounded	sub angular well round		SP SM SC	poorly graded gravelly silty-sand sandy-silt sand clay mixture	low plast. high plast. Peat	OL OH PT	silty clay low plasticity clay med to high plasticity humus swamp soils, organic

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Geologic Boring Log

								Vest API Separator SWMU 02
	Client:							Location
)8						tion		Yabucoa, Puerto Rico
			ineer					Drilling Contractor
								Jaca & Sierra Sampler type
		spleted						2"x 24" Carbon Steel Split Spoo
		Dlow	DID		Tipod	Soil Desc		
77000			l i		Description made			
[(ppm)					
	4		•	0.2.6				
SP, SM	18	7-5-3-2	4					
Sample c	ollected							
			. '		-		on oa	or and staining.
			2					. (101F) (10 G1
Sample c	ollected							
	*							
						ses and imn	nunoa	ssay samples collected.
				Bori	ng terminated.			
					W.			
			-		×			
<u> </u>				<u> </u>				
		! 			Soil Descriptions*	on. 4 or	ls	
	Size (mm		Gravel	Sym		Silt & Clay	Sym	
Coarse	Medium) Fine	no fines	GW	well graded gravel			Inorganic
Coarse 19-75				GW GP	well graded gravel poorly graded gravel	low plast.	ML	silts and very fine sand
	Medium	Fine	no fines	GW	well graded gravel	low plast.	ML CL	silts and very fine sand gravelly,sandy,silty clay
19-75	Medium	Fine 4.8-19	no fines little fines	GW GP GM	well graded gravel poorly graded gravel	low plast.	ML	silts and very fine sand
19-75 2.0-4.8	Medium	Fine 4.8-19 .08043	no fines little fines some fines some fines	GW GP GM	well graded gravel poorly graded gravel sand,silt,gravel mix	low plast.	ML CL	silts and very fine sand gravelly,sandy,silty clay
19-75 2.0-4.8 very loose	Medium 43-2.0	### 4.8-19 .08- 043 <.08 med. dense	no fines little fines some fines some fines Sand	GW GP GM	well graded gravel poorly graded gravel sand,silt,gravel mix	low plast. low plast. high plast.	ML CL MH	silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous
19-75 2.0-4.8 very loose dense	43-2.0 loose very dens	### ##################################	no fines little fines some fines some fines some fines and no fines	GW GP GM GC	well graded gravel poorly graded gravel sand,silt,gravel mix sand,clay,gravel,mix well graded gravelly	low plast. low plast high plast. high plast.	ML CL MH	silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay
19-75 2.0-4.8 very loose dense very ang	.43-2.0 loose very dens angular	### 4.8-19 ###.08-043 ###.08 ###.08 ###.dense ### sub angular	no fines little fines some fines some fines Sand no fines little fines	GW GP GM GC SW SP	well graded gravel poorly graded gravel sand,silt,gravel mix sand,clay,gravel,mix well graded gravelly poorly graded gravelly	low plast. low plast high plast. high plast. low plast.	ML CL MH CH	silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic silty clay low plasticity
19-75 2.0-4.8 very loose dense	.43-2.0 loose very dens angular rounded	Fine 4.8-19 .08-043 <.08 med. dense e sub angular well round	no fines little fines some fines some fines some fines and no fines	GW GP GM GC SW SP SM	well graded gravel poorly graded gravel sand,silt,gravel mix sand,clay,gravel,mix well graded gravelly	low plast. low plast high plast. high plast.	ML CL MH CH	silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic
	SM	Néstor Maria Grand Néstor Mestor Maria Grand Néstor	Puerto Rico Sun C AMAI Geologist/Eng Néstor M. Rivera Date Completed 7/12/96 Reco-Blow Counts Symbol (per 24") (per 6") SP, SM 18 7-5-3-2 Sample collected SM 18 2-1-1-2 Sample collected	Puerto Rico Sun Oil Compa AMAI Geologist/Engineer Néstor M. Rivera Date Completed 7/12/96 Recovery Symbol (per 24") (per 6") SP, SM 18 7-5-3-2 4 Sample collected SM 18 2-1-1-2 2 Sample collected	Puerto Rico Sun Oil Company AMAI Geologist/Engineer Néstor M. Rivera Date Completed 7/12/96 Reco- Blow PID (ppm) (per 24") (per 6") SP, SM 18 7-5-3-2 4 0-2 f dark Sample collected SM 18 2-1-1-2 2 Immed Sample collected Sample collected Tomposition of the complete	Puerto Rico Sun Oil Company RCRA Facility Investigated AMAI Geologist/Engineer Néstor M. Rivera Mario Sierra Date Completed T/12/96 Wery Counts (ppm) Symbol (per 24") (per 6") SP, SM 18 7-5-3-2 4 0-2 ft. Gravelly silty sand . L. dark yellowish brown (10YR4 composed of quartz, mica, pyrifine to coarse. Top soil showe Immunoassay samples collected Sample collected 4 composed of quartz, mica, pyrifine to coarse. Top soil showe Immunoassay samples collected 2-4 ft. Sand. Loose, wet to sat composed of quartz, mica, pyrifine to coarse. Top soil showe Immunoassay samples collected 2-4 ft. Sand. Loose, wet to sat composed of quartz, mica, pyrifine to coarse. Top soil showe Immunoassay samples collected 2-4 ft. Sand. Loose, wet to sat composed of quartz, mica, pyrifine to coarse. Top soil showe Immunoassay samples collected 2-4 ft. Sand. Loose, wet to sat composed of quartz, mica, pyrifine to coarse. Top soil showe Immunoassay samples collected 2-4 ft. Sand. Loose, wet to sat composed of quartz, mica, pyrifine to coarse. Top soil showe Immunoassay samples collected 2-4 ft. Sand. Loose, wet to sat composed of quartz, mica, pyrifine to coarse. Top soil showe Immunoassay samples collected 2-4 ft. Sand. Loose, wet to sat composed of quartz, mica, pyrifine to coarse. Top soil showe Immunoassay samples collected 2-4 ft. Sand. Loose, wet to sat composed of quartz, mica, pyrifine to coarse.	Puerto Rico Sun Oil Company RCRA Facility Investigation AMAI Geologist/Engineer Néstor M. Rivera Date Completed 7/12/96 Reco- Blow Very Counts Symbol (per 24") (per 6") SP, SM 18 7-5-3-2 4 0-2 ft. Gravelly silty sand . Loose, slightly dark yellowish brown (10YR4/4) to yellow composed of quartz, mica, pyrite, shell and fine to coarse. Top soil showed hydrocarb Immunoassay samples collected. Sample collected Sample collected Tripod Soil Description made from auger or (grain size, sorting, more dark yellowish brown (10YR4/4) to yellow composed of quartz, mica, pyrite, shell and fine to coarse. Top soil showed hydrocarb Immunoassay samples collected. 2-4 ft. Sand. Loose, wet to saturated, yellow composed of quartz, mica, pyrite, shell and from fine to coarse. Full analyses and imm	Puerto Rico Sun Oil Company AMAI Geologist/Engineer Néstor M. Rivera Date Completed 7/12/96 Reco- Symbol (per 24") (per 6") Symbol (per 24") (per 6") Sample collected Sample collected Sample collected Tamunoassay samples collected Sample collected Teipod Reco- (per 6") Reco- (per 10") Reco- (per 20") Reco- (per 1

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New York, New York 10012

Geologic Boring Log

Boring ID								E	
		Client:				Project:	tion		Location Yabucoa, Puerto Rico
03-0			ico Sun O			RCRA Facility Investiga	tion		Paducoa, Puerto Kico Drilling Contractor
Project No.			ologist/Engi	neer		Driller			Jaca & Sierra
			1. Rivera			Mario Sierra Drilling Method			Sampler type
Date Started		Date Com	2/96			Tripod			2"x 24" Carbon Steel Split Spoo
7/2/9	76	Reco-	Blow	PID		Tripod	Soil Desc		
Depth	TICCC		l l			Descriptions mad		-	unless otherwise noted
bgl	USCS	very	Counts	(ppm)			ze, sorting, moi		
(ft.)	Symbol	(per 24")	(per 6")	5	0.26				oist, dark olive brown (2.5Y3/3)
0	SP, SM	12	4-5-6-6	,	U-2 1	L Graverry Sairu to Sairu.	16/3) Sand (omn	osed of quartz, mica, pyrite,
	لــــــا	<u></u>							ine to coarse. Coarse gravel
1	Sample c	onected				unoassay sample collecte		· VIII I	nie to domine. Compe graver
_					umm	moassay sample collecte	u. wk (2 SV2 1	/1\ C	and composed of quartz, mica,
2	SM	12	3-3-4-2	57	2-4 I	t. Sand. Loose, moist, die	ICK (2.312.1	/ 1 <i>j</i> . 0	from fine to course
\$6						e, shell and lithic fragme			
3	Sample c	ollected				~ -		. umr	nunoassay sample collected.
						analysis sample collected			3°-3 4 31
4	SM	20	3-3-5-7	8	4-6 1	t. Sand. Same as above, l	ontom of sp	oon :	ngnt yenow
	Sample c	ollected			to lig	tht gray (2.5Y7/1). Sand	composed of	quar	tz, mica, pyrite, shell and lithic
5					fragr	nents varying in size fror	n tine to coa	rse. L	ocally thin clay layers were
		\\				rved. Hydrocarbon odor.			
6						black (2.5Y2.1/1) to ligh	t yellowish b	rown	(2.5Y6/3)
					Bori	ng terminated			
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	88								
	**								
	<i>***</i>								
	(V)								
	88								
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						Sail Descriptions*			3
	(V)					Soil Descriptions*	Site & Clay	Sum	7
Туре		Size (mm)		Gravel	Sym		Silt & Clay	Sym	
	Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic
Gravel	Coarse 19-75	Medium	Fine 4.8-19	no fines little fines	GW GP	well graded gravel	low plast.	ML	Inorganic silts and very fine sand
Gravel Sand	Coarse 19-75 2.0-4.8	Medium .43-2.0	Fine 4.8-19 .08043	no fines little fines some fines	GW GP GM	well graded gravel poorty graded gravel sand,silt,gravel mix	low plast.	ML CL	Inorganic silts and very fine sand grayelly,sandy,silty clay
Gravel Sand	Coarse 19-75	Medium .43-2.0	Fine 4.8-19 .08043 <.08	no fines little fines some fines some fines	GW GP GM	well graded gravel	low plast. low plast. high plast.	ML CL MH	Inorganic silts and very fine sand grayelly,sandy,silty clay micaceous/diatomaceous
Gravel Sand Silt & clay	Coarse 19-75 2.0-4.8	Medium .43-2.0	Fine 4.8-19 .08043	no fines little fines some fines some fines	GW GP GM	well graded gravel poorly graded gravel sand,silt,gravel mix sand,clay,gravel,mix	low plast.	ML CL	Inorganic silts and very fine sand grayelly,sandy,silty clay micaceous/diatomaceous high plasticity clay
Gravel Sand Silt & clay	Coarse 19-75 2.0-4.8	Medium .43-2.0	Fine 4.8-19 .08043 <.08 med. dense	no fines little fines some fines some fines	GW GP GM	well graded gravel poorty graded gravel sand,silt,gravel mix	low plast. low plast. high plast.	ML CL MH CH	Inorganic silts and very fine sand grayelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic
Gravel Sand Silt & clay Soil density	19-75 2.0-4.8 very loose	Medium .43-2.0 loose	Fine 4.8-19 .08043 <.08 med. dense	no fines little fines some fines some fines Sand no fines	GW GP GM GC	well graded gravel poorly graded gravel sand,silt,gravel mix sand,clay,gravel,mix	low plast. low plast. high plast.	MIL CL MH CH	Inorganic silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic silty clay low plasticity
Type Gravel Sand Silt & clay Soil density Angularity	Coarse 19-75 2.0-4.8 very loose dense	A43-2.0 loose very dens	Fine 4.8-19 .08043 <.08 med. dense	no fines little fines some fines some fines Sand no fines little fines	GW GP GM GC SW SP	well graded gravel poorty graded gravel sand,silt,gravel mix sand,clay,gravel,mix well graded gravelly	low plast. low plast. high plast. high plast.	ML CL MH CH	Inorganic sitts and very fine sand grayelly,sandy,sitty clay micaceous/diatomaceous high plasticity clay Organic

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Geologic Boring Log

						<u></u>			ast API Separator SWIVIU 03	
Boring ID		Client:				Project:	4:		Location Valuesca Prosto Pico	
03-0			ico Sun O			RCRA Facility Investiga	tion		Yabucoa, Puerto Rico Drilling Contractor	
Project No.			ologist/Engi	neer		Driller Mario Sierra			Jaca & Sierra	
24.04.3		Nestor N Date Com	/ Rivera			Drilling Method			Sampler type	
Date Started 7/2/96		7/2/96	pieteu			Tripod			2"x 24" Carbon Steel Split Spoo	
		Reco-	Blow	PID			Soil Desc			
Depth	uscs		Counts	(ppm)		Description made			inless otherwise noted.	
bgl		very	(per 6")	(Ppin)			ze, sorting, moi			
(ft.) 0	Symbol CD CM	(per 24") 16	3-3-1-4	0	0_2 fi				se to soft, slightly moist, dark	
٠ ا	SP, SM	10	3-3-1-7	ŭ	olive	brown (2 5Y3/3) to light	t vellowish b	rown	(2.5Y6/3). Sand composed of	
			1	1	anart	z mica pyrite shell and	lithic fragm	ents v	arying in size from fine to	
. 1				1		e. no product odor, no pr			_,_g	
	C) 4	10	3-2-2-1	o	2.4.6	t Sand I noce maist he	own (10YR5	73) S	and composed of quartz, mica,	
2	SM	18	3-2-2-1	١	Z-4 1	e shall and lithic fragmet	nte varvina i	n size	from fine to coarse.	
		22 ()			pyrite, shell and lithic fragments varying in size from fine to coarse. No product odor, no product staining. Immunoassay samples collected.					
3	Sample c	ollected			No product odor, no product staming. immunoassay samples conected.					
						s Cand Taras mada Mi	nak (2 572 1	/11+=	light yellowish brown (2.5Y6/3	
4	SM	16	3-4-7-6	0	4-6 f	t. Sand. Loose, moist, bia	ack (2.3 1 2.1	/1 / 10 all a-	d lithic framente versing in	
	Sample c	ollected			Sand	composed of quartz, mic	ca, pyrite, sii	en an	d lithic fragments varying in	
5		*							ents encountered in a wet sandy	
					silt n	natrix. Immunoassay sam	iples collecte	d.		
6										
	·				Bori	ng terminated				
	5500				İ					
	!				- 1					
					l					
					l					
			[l					
					l					
					1					
		Ì		ŀ						
		L	1	· · · · · ·		Soil Descriptions*			<u> </u>	
T		Size (mm		Gravel	Sym		Silt & Clay	Sym		
Туре	Canan	Medium	Fine	no fines	GW	well graded gravel			Inorganic	
O1	Coarse	Meaium 解设	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand	
Gravel	19-75 2.0-4.8	-		some fines	_	sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay	
	2 7 H A V	.43-2.0	.08043	some fines	-	sand,clay,gravel,mix	high plast.	MH	micaceous/diatomaceous	
		27590 Tre 790	200		l GC	sentu,ciay,graver,iittx				
Silt & clay			<.08				high place	ICH I	high placticity clay	
Silt & clay			med, dense	Sand			high plast.	СН	high plasticity clay	
Silt & clay		very dens	med, dense	Sand no fines	sw	well graded gravelly		·	Organic	
Silt & clay	very loose dense very ang	very dens angular	med, dense e sub angular	Sand no fines little fines	SP	poorly graded gravelly	low plast.	OL	Organic silty clay low plasticity	
Sand Silt & clay Soil density Angularity Note - density	very loose dense very ang sub round	very dens angular rounded	med, dense se sub angular well round	Sand no fines little fines	SP SM			·	Organic	

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Geologic Boring Log

						·			
Boring ID		Client:			Project:	.*	Location		
03-0	03		Rico Sun C		mpany RCRA Facility Investigation Yabucoa, Puerto Rico Driller Drilling Contractor				
roject No.			cologist/Eng	ineer	Mario Sierra		Jaca & Sierra		
ate Started		Date Con	M Rivera		Drilling Method		Sampler type		
7/3/96		7/3/96			Tripod		2"x 24" Carbon Steel Split Spo		
Depth		Reco-	Blow	PID		Soil Descrip			
bgi	USCS	very	Counts	(ppm)	Description made	_	s, unless otherwise noted.		
_	Symbol	(per 24")	1	Фригу	-	ize, sorting, moisture			
(ft.)	SP, SM	12	10-7-1-2	6			pose to soft, slightly moist, very		
U	SF, SWI	12	10-7-1-2				(10YR4/4). Sand composed of		
1	ļ				quartz, mica, pyrite, shell and				
1	Sample o	ollected			coarse. Full analysis and Imm				
2	SM	16	1-1-12-2	2	2-4 ft. Sand. Loose, slightly n				
2	SM	10	1-1-12-2	2	composed of quartz, mica, py				
	2 ,				composed of quartz, fines, py	ore, silen and h	contamination, no product odor		
3	Sample o	onected							
					Full Analysis and Immunoass				
4	SM	24	3-2-1-4		4-6 ft. Top of spoon (8") same		of spoon - Sand composed of		
_									
5				19			ing in size from fine to coarse.		
_					no product odor no product st		following comple		
6					Continue with drilling point to	o /-II, to collect	Tonowing sample		
				_		T A	-1:-bal-, — siza deste vellennish		
7	CL	24	7-3-3-4	0			slightly moist, dark yellowish		
					brown (10YR4/4). Sand comp	posed of quartz,	mica, pyrite, snell and lithic		
8	Sample of	ollected					Grey mottles locally observed.		
					-	tains, Full Analy	sis and Immunoassay samples		
9					collected.				
	ŀ				Boring terminated				
	ŀ								
	ł								
		i	 - -						
							ä		
							ů.		
					Soil Descriptions*				
Тупе		Size (mm		Gravel	Soil Descriptions*	Silt & Clay Syn	32		
Type	Coarse	Size (mm Medium) Fine	Gravel no fines		Silt & Clay Syn	Inorganic .		
	+	Medium			Sym	Silt & Clay Syn	Inorganic .		
iravel	19-75	Medium	Fine 4.8-19	no fines little fines	Sym GW well graded gravel GP poorly graded gravel		Inorganic .		
ravel and	19-75 2.0-4.8	Medium	Fine 4.8-19 .08043	no fines little fines some fines	GW well graded gravel GP poorly graded gravel GM sand,silt,gravel mix	low plast. ML	Inorganic silts and very fine sand gravelly,sandy,silty clay		
ravel and ilt & clay	19-75 2.0-4.8	Medium .43-2.0	Fine 4.8-19 .08043 <.08	no fines little fines some fines some fines	GW well graded gravel GP poorly graded gravel GM sand,silt,gravel mix	low plast. ML low plast. CL high plast. MH	Inorganic silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous		
ravel and ilt & clay	19-75 2.0-4.8 very loose	Medium .43-2.0 loose	Fine 4.8-19 .08043 <.08 med. dense	no fines little fines some fines some fines Sand	Sym GW well graded gravel GP poorly graded gravel GM sand,silt,gravel mix GC sand,clay,gravel,mix	low plast. ML low plast. CL	silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay		
ravel and itt & clay oil density	19-75 2.0-4.8 very loose dense	Medium .43-2.0 loose very dens	Fine 4.8-19 .08043 <.08 med. dense	no fines little fines some fines some fines Sand no fines	Sym GW well graded gravel GP poorly graded gravel GM sand,silt,gravel mix GC sand,clay,gravel,mix SW well graded gravelly	low plast. ML low plast. CL high plast. MH high plast. CH	Inorganic silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic		
Type iravel and iit & clay ioil density	19-75 2.0-4.8 very loose dense very ang.	.43-2.0 loose very dens angular	Fine 4.8-19 .08043 <.08 med. dense e sub angular	no fines little fines some fines some fines Sand no fines little fines	Sym GW well graded gravel GP poorly graded gravel GM sand,silt,gravel mix GC sand,clay,gravel,mix SW well graded gravelly SP poorly graded gravelly	low plast. ML low plast. CL high plast. MH high plast. CH low plast. OL	Inorganic silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic silty clay low plasticity		
iravel and ilt & clay oil density	19-75 2.0-4.8 very loose dense very ang. sub round	.43-2.0 loose very dens angular rounded	Fine 4.8-19 .08043 <.08 med. dense e sub angular well round	no fines little fines some fines some fines Sand no fines	Sym GW well graded gravel GP poorly graded gravel GM sand,silt,gravel mix GC sand,clay,gravel,mix SW well graded gravelly	low plast. ML low plast. CL high plast. MH high plast. CH	Inorganic silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic silty clay low plasticity		

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Geologic Boring Log

							<u> </u>	I	East API Separator SWMU 03	
Boring LD		Client:				Project:			Location	
03-0)4		Rico Sun (any	RCRA Facility Investig	ation		Yabucoa, Puerto Rico	
Project No.			eologist/Eng	gineer		Driller			Drilling Contractor	
Data Carra		Gustavo		 		Mario Sierra			Jaca & Sierra	
Date Started 7/2/96		7/2/96				Drilling Method Tripod			Sampler type 2"x 24" Carbon Steel Split Spoo	
		*	Blow	PID		Проц	Soil Des	avinti		
Depth	TIECE	Reco-	ł .	l		D		-		
bgl	USCS	very	Counts	(ppm)	ł	•		_	unless otherwise noted.	
(ft.)	Symbol	(per 24")		26	0.2	gram s ft. Sand and silt, abundar			color/hue etc.)	
0	SM	16	3-4-4-6	25	I .	•	•		•	
_	Sample	collected	1		I.	rly graded, loosely packe		-		
1	İ					isual contamination Hue		gnt on	ive or.	
_		1		۱		unoasay sample collecte			* . ***	
2	SM	12	5-4-3-2	28		-			noist, little or no gravel or	
		<u> </u>	1			· •			ination, Hue light yellowish	
3	Sample o	collected]	brown 10 YR 5/4 Immunoassay sample collected					
	j		ł	1						
4	SM	12	2-2-3-4	25				_	avel, trace mica and pyrite	
	Ī					roduct odor, or visual co		Hue l	ight yellowish brown	
5					10Y	R 5/3 Bottom (4") satura	ated			
	Sample o	collected]	İ	lmm	unoassay sample collecte	ed			
6		_ ▼]		Boring terminated					
]	1						
						Soil Descriptions*				
	1	.		a .		Son Descriptions	City & Class	·		
Type		Size (mm)	_	Gravel	Sym		Silt & Clay	Sym	F	
ă)	Coarse		Fine	no fines	GW	well graded gravel		1	Inorganic	
iravel	19-75	教育等	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand	
and	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay	
ilt & clay		Laborator .	<.08	some fines	GC	sand,clay,gravel,mix	high plast.	МН	micaceous/diatomaceous	
oil density	very loose	loose	med. dense	Sand	<u> </u>		high plast.	CH	high plasticity clay	
	dense	very dense	e	no fines	sw	well graded gravelly			Organic	
ngularity	very ang.	angular	sub angular	little fines	SP	poorly graded gravelly	low plast.	OL	silty clay low plasticity	
-	sub round	rounded	well round	some fines	SM	silty-sand sandy-silt	high plast.	ОН	clay med. to high plasticity	
lote - density a	ilso in blow	s/foot abov	e	some fines	SC	sand clay mixture	Peat	PT	humus,swamp soils, organic	

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Geologic Boring Log

						<u></u>]	East API Separator SWMU 03
Boring ID		Client:				Project:	.•		Location
03-	05		Rico Sun (any	RCRA Facility Investig	ation		Yabucoa, Puerto Rico
Project No.			cologist/Eng	ineer		Driller Maria Siama			Drilling Contractor
Date Started		Date Con	M Rivera			Mario Sierra Drilling Method			Jaca & Sierra Sampler type
7/3/96	:	7/3/96	•			Tripod			2"x 24" Carbon Steel Split Spoor
Depth	, T	Reco-	Blow	PID		Проц	Soil Des	rinti	
-	USCS	very	Counts	l l		Description mad		_	unless otherwise noted.
bgl	1			(ppm)			ize, sorting, mo		
(ft.)	Symbol	(per 24")	(per 6") 4-1-2-1	1	0.2			_	1,2.5/N) to dark yellowish
U	SM		2	'					nica, pyrite, shell and lithic
	Sample	conecteu				ments varying in size from	-		
1				•					
	014	١,,		, ;		· ·			unoassay sample collected
2	SM	18	2-4-6-8	1					wn (10YR4/3). Sand composed
_		L	l					gmen	ts varying in size from fine to
3	Sample	collected				ing in size from fine to c			
						unoassay sample collecto	ea		
4					4-6	477			
•									g. Sample from 7-9 ft. interval
							offset boring	was	drilled to 7 ft. The 7-9 ft.
			9		sam	ple was recovered.			
				<u> </u>					
+	1								
	1								
7	SM	12	2-1-1-1	1					are abundant, Hue dark gr. grey
							enish gray ((Gley1	, 4/1, 10Y). no product odor
8	Sample o	collected			no v	isual contamination			
		₩			lmm	unoassay sample collecte	ed		
9					Bori	ng terminated.			
•									
	1								
	1								
	I					Soil Descriptions*			
T		Sinc ()	, ;	Carrel	S	·	Silt & Clay	Sym	
Туре	 	Size (mm)		Gravel	Sym		Sin or Clay	35 AB	Inorganic
	Coarse	Medium	Fine	no fines		well graded gravel	lanualest	247	silts and very fine sand
Gravel	19-75	Elevic.	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	
Sand	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay
Silt & clay		William Ton	<.08	some fines	GC	sand,clay,gravel,mix	high plast.	MH	micaceous/diatomaceous
			med. dense	Sand			high plast.	СН	high plasticity clay
Soil density	very loose	loose	micu. dense						
Soil density	very loose dense	loose very dens	e	no fines	SW	well graded gravelly			Organic
	-			no fines	SW SP	well graded gravelly poorly graded gravelly	low plast.	OL	silty clay low plasticity
Soil density Angularity	dense	very dens	e	no fines	SP		low plast. high plast.	OH	
·	dense very ang- sub round	very dens angular rounded	sub angular well round	no fines little fines	SP SM	poorly graded gravelly			silty clay low plasticity

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Geologic Boring Log

									ast API Separator SWMU 03
Boring ID		Client:				Project:			Location
03-0	06		tico Sun C		ıny	RCRA Facility Investiga	ation		Yabucoa, Puerto Rico
Project No.			ologist/Eng	ineer		Dritter Mario Sierra			Drilling Contractor Jaca & Sierra
Date Started		Date Com	M Rivera			Drilling Method			Sampler type
7/9/96		7/9/96	pieteo			Tripod			2"x 24" Carbon Steel Split Spoo
Depth	1	Reco-	Blow	PID			Soil Desc		
bgì	uscs	very	Counts	(ppm)		Description made		-	unless otherwise noted.
_	Symbol	(per 24")	(per 6")	(Ppin)		•	ize, sorting, mo		
(ft.)	SM	12	1-1-1-1	0	0-2 f	t. Silty sand. Loose, sligh			
U	Sample of								nd lithic fragments varying in
1	Sample	Officered				from fine to coarse. Imm			
1						isual contamination, no p			
2	SM	12	1-1-2-2	0		t. same as above and sate			live brown (2.5Y5/4).
2	SIM	12	1-1-2-2						d lithic fragments varying in
200	Comple	ollosted				ing in size from fine to co			
3	Sample o	onected		1		nunoassay sample collect		.Juu. 0	onamination, no occi.
	CM				4-6 f		.00		
4	SM				7-0 1	te .			
	-				C~~.	inue drilling with pointer	r no soil sam	nling	
5	ľ				Com	muc uning wan ponter	1 110 3011 3411	P.0.5.	
6		Ι.							
_		10	2224	_		أم مه اسمه بطائم مداد م	lau I ooso ta	e+iff	moist to wet, dark grayish
7	SM	18	3-3-3-4	0					wn (7.5YR4/3). Sand compose
_									
8	Sample of	ollected							s varying in size from fine to
									unoassay sample collected
9	SM	24	1-1-1-3	0		ft Sand - same as above,			
	ľ	·			to a	ark gray (5 Y 4/1) with bia	ack (Gley I, a	2.3/IN)	mottles. Sand composed s varying in size from fine to
10									
						arse, no product odor, no	o visuai cont	анниа	HOH
11		l			Bom	ng terminated.			
	İ								
	•								
	1								
	ļ								
]						
	<u> </u>	<u> </u>	<u> </u>		<u></u>	Soil Descriptions*	 -		1
					١	Son Descriptions	Cité & Class	S.,	
Туре	 	Size (mm		Gravel	Sym	11 amaded ==1	Silt & Clay	Sym	Inorganic
	Coarse	Medium	Fine	no fines	_	well graded gravel	low plant	ML	silts and very fine sand
Gravel	19-75			little fines	GP	poorly graded gravel	low plast.	CL	gravelly,sandy,silty clay
·-	2.0-4.8	.43-2.0	.08043	some fines	-	sand,silt,gravel mix	low plast.	-	micaceous/diatomaceous
and			<.08	some fines	GC	sand,clay,gravel,mix	high plast.	МН	
and	St. 14.0	AACE NO.					high plast.	ICH	
and ilt & clay		-	med. dense	Sand	<u> </u>		mgn prast.	1~	high plasticity clay
and ilt & clay	Series of	-	med. dense	Sand no fines	sw	well graded gravelly			Organic
Sand Silt & clay Soil density	very loose	loose	med. dense	no fines	-	poorly graded gravelly	low plast.	OL	Organic silty clay low plasticity
Sand Silt & clay Soil density Angularity Note - density	very loose dense very ang. sub round	loose very dens angular rounded	med. dense e sub angular well round	no fines	SP				Organic

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Geologic Boring Log

								East API Separator SWMU 03				
Boring II	D	Client:			Project:		45	Location				
03	-07	Puerto R				ity Investigation		Yabucoa, Puerto Rico				
Project N	io.	AMAI Ge	ologist/En	gineer	Driller			Drilling Contractor				
		Néstor M	1 Rivera		Mario Sierra			Jaca & Sierra				
Date Star	rted	Date Com	pleted		Drilling Meth-	pd		Sampler type				
7/9/96		7/9/96			Tripod			2"x 24" Carbon Steel Split Spoon				
Depth	T	Reco-	Blow	PID			Soil Description					
bgl	USCS	very	Counts	(ppm)		Descriptions made fro	m auger ci	uttings, unless otherwise noted				
(fl.)	Symbol	(per 24")	(6" each)		Í	(grain size, s	orting, mo	isture, color/hue etc.)				
0	SM	6	4-5-2-2	0	0-2 ft. Sand. Loo			ay (5Y4/2). Sand composed of				
·	""						_	nts varying in size from fine to				
1	Sample	collected						t odor, Immunoassay samples collected.				
•	Sample	l			1		- p	, , , , , , , , , , , , , , , , , , , ,				
2	SM	10	1\12"-1	0	2-4 ft. Sand to sil	ty sand Loose si	ightly m	oist, yellowish brown (10YR5/4).				
2	3141	10	1	Ů				of quartz, mica, pyrite, shell and				
,			'		varying in size fro			or damen miner blives onen min				
3	Sala	oollosts.			product observed			onles collected				
	Sample	collected			<u> </u>	ш энн шининог	asay sali	ipies concettu.				
4					4-6 ft.	A mish daine aci-	t no coil	campling				
					Drilled from 4-6	n with the poin	ı, IIO SOH	oanhing.				
↓												
·												
7	SM	12	1-1-2-3	23				rated, dark olive gray (5Y3/2).				
					Sand composed of	f quartz, mica, py	rite, she	II and lithic fragments varying in size				
8		•			Product observed	in soil						
	Sample	collected			Full analysis and	Immunoassay sar	nple coll	ected				
9	-				Boring terminated	d.						
·		1										
	l											
	<u> </u>				100.00	American Describe						
						struction Details		0				
Casing m			Screen slo		Screen Interval	Filter Paci	-	Сар Туре				
1.25 " x	Schedul	e 40 PV	0.020	inch	1-6 ft.	No. 2 Sil	ica sand	Watertight				
Security	casing/mai	ahole:			Lock type:							
none					none	·						
Notes:												
Well insta	alled on 7/1	6/96. Filter	pack range	d from 1	-5 ft. Seal ranged from	0-1 ft. Riser was 29	. Depth to	groundwater was 3'3".				
						velopment Data						
Date:		Technique				•	Volume	ourged:				
DEIC.				nsino '	5/8" high density p	olvethylene hose		<u> </u>				
	Tom	p (°C)	SC (µ			Notes: SC - spec		luctance				
Imiei-le			υς (μ	-		210103. BC - apol	-,,,,,					
Initial:			-	10								
Final:	<u>`</u>	_	-	-0.20								

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Geologic Boring Log

								E.	ast API Separator SWMU 03	
Boring ID		Client:				Project:			Location Volumes Program Pine	
03-08 Puerto Rico Sun Oil Comp					ıny	RCRA Facility Investiga		Yabucoa, Puerto Rico		
Project No. AMAI Geologist/Engineer Gustavo Felipe					Driller Drilling Contractor Constancio Olivo Jaca & Sierra					
Date Started		Date Com				Drilling Method			Sampler type	
5/21/96		6/21/96	preced			3.25" ID - 6.00" OD Ho	liow Stem A		2"x 24" Carbon Steel Split Spo	
Depth		Reco-	Blow	PID			Soil Desc			
bgl	USCS	very	Counts	(ppm)		Description made		•	unless otherwise noted.	
=	Symbol	(per 24")	(per 6")	(P)111)		•	ze, sorting, moi			
(ft.)	SP	16"	3-6-5-3	3.7	0-0-4	ft Concrete coring				
v) or	10	3-0-3-3			ft Sand and gravel mix,	Backfill zor	e no	visible contamination.	
						throughout, poorly sorted				
•	Comelo e	- Nootod				7.5 YR 4/3 Brown	i granis, 100s	∼ij p	acked speeds,	
1	Sample c	ollected					somnler e	مالم	e d	
					run.	analysis and Immunoassa	iy sampies c	OHECL	eu.	
_			ا ا			· C	محمد احتماده	:	ution no product odor	
2	SP	12"	1-3-1-1			t Sand same as above, no		amuns	ation, no product odoi	
						ly sorted, and well packe				
						throughout, Hue 5Y 4/2			•	
3	Sample c	ollected			Full :	analysis and Immunoassa	ay samples c	ollect	red.	
						_		_		
4	SP		:			t Sand same as above, no		or, Dr	ry throughout,	
	ļ				poor	ly sorted, Hue 5Y 4/2 Ol	ive Gray			
5										
			į							
6		0"								
	CL	18"	1-1-1-1			t Sand - little gravel, abu				
					at to	o of spoon (9") saturated	below, Grou	ırldwa	ater encountered at 8 ft.	
7					no vi	sible contamination, no	product odor			
	Sample c	ollected			Full	analysis and Immunoassa	ay samples c	ollect	ed.	
	<u>-</u>					•	•			
8		▼								
·		. *			Grov	t to surface, repair concr	ete core.			
						ng terminated	,			
9						- 6				
, ,										
	<u> </u>					Soil Descriptions*				
Type	Γ	Size (mm)		Gravel	Sym		Silt & Clay	Sym		
- 1 hr	Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic	
Gravel	19-75	A 1746	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand	
Sand	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay	
ilt & clay		DATES S	<.08	some fines	GC	sand,clay,gravel,mix	high plast.	мн	micaceous/diatomaceous	
		de la cons	med. dense		 		high plast.	СН	high plasticity clay	
ioil density	very loose	loose			CDI	mall assign assign	m.B. p.ast.	1~	Organic	
	dense	very dens		no fines	SW	well graded gravelly	low stort	OL	silty clay low plasticity	
Logularity	very ang.		sub angular		SP	poorly graded gravelly	low plast.	ОН	clay med, to high plasticity	
	sub round	rounded	well round		_	silty-sand sandy-silt	high plast.	PT	humus,swamp soils, organic	
Note - density	alen in blow	s/foot ahov	e.	some fines	sc	sand clay mixture	Peat	EF I	i iminayy anin yony of Kaliic	

611 Broadway Suite 907G New York, New York 10012

Geologic Boring Log

		·- <u> </u>							East AF1 Separator SWINO 03			
Boring II		Client:			Project: Location							
	03-09 Puerto Rico Sun Oil Co.				RCRA Facility Investigation Yabucoa, Puerto Rico							
Project No. AMAI Geologist/Engineer					Driller Drilling Contractor							
		Néstor N				Mario Sierra Jaca & Sierra						
Date Star		Date Com	_		Drilling Metho	od			Sampler type			
	0/96)/96		Tripod				2"x 24" Carbon Steel Split Spoon			
Depth		Reco-	Blow	PID					cription			
bgl	USCS	very	Counts	(ppm)		-			cuttings, unless otherwise noted			
(ft.)	Symbol	(per 24")	<u> </u>						oisture, color/hue etc.)			
0	SP	16	8-5-3-2	65		•			soft, slightly moist, brown			
		<u> </u>	i 1						composed of quartz, mica, pyrite,			
1	Sample	collected	1			_			om fine to coarse. Immunoassay			
					sample collected,							
2	SM, SC	16	-12-1-1	72					ightly moist to wet, very dark gray			
					l' '	•			yrite, shell and lithic fragments			
3	Sample	collected							oassay (and duplicate) samples			
					collected. Product		-					
4	SM, SC		1-1-2-2	22	4-6 ft. Sand to silt							
	Sample	collected		1					nd composed of quartz, mica, pyrite,			
5					E .	-	ying ir	a size fro	om fine to coarse. Hydrocarbon odor			
					and free product observed.							
6					Immunoassay san	nple collecte	ed					
7	SM	8	1-2-2-2	40		_			t, slightly moist to wet, very dark			
							-). Sand composed of quartz, mica,			
8					pyrite, shell and lithic fragments varying in size from fine to coarse.							
					product observed							
9	SM	12	2-4-2-2	3	9-11 ft. Silty sand							
							-	-	tz, mica, pyrite, shell and lithic			
10		L							se. Hydrocarbon odor and free			
	Sample	collected		+	product observed. Full analysis and laboratory samples collected.							
11					Immunoassay san	-	ed					
					Boring terminated	j						
									19			
						struction D		-				
Casing m			Screen slo		Screen Interval		Filter Pack Cap Type					
1.25" X	schedule	40 PVC	0.020	inch	3-10 ft.	No.	2 Sili	ca sand	Watertight			
Security (casing/man	hole:			Lock type:							
none					none							
Notes:												
Well insta	illed on 7/1	6/96. Filter	pack range	d from 1	3 ft. Seal ranged from				S-22			
					Well Dev	elopment l	Data					
Date:		Technique						Volume 1	purged:			
		Centrifu			5/8" high density polyethylene hose.							
	Tem	(°C)	SC (µ	S/cm)	pН	Notes: SC	- spec	ific conc	ductance			
lnitial:	-							+				
Final:		•		•								
									Prepared 6/11/97			

AMAT

611 Broadway Suite 907G

New York, New York 10012

Geologic Boring Log

03-10 Puerto Rico Sun Oil Co. RCRA Facility Investigation Yabucoa, Puerto Rico Project No. AMAI Geologist/Engineer Driller Drilling Contractor Gustavo Felipe Constancio Olivo Jaca & Sierra Date Started Date Completed Drilling Method Sampler type									East API Separator SWMU 03			
Project No. AMAI Geologist/Espisore Gustavo Pelips Constancio Olivo Jaca & Sierra	Boring ID			<u>-</u>		•						
Second Substitute State												
Date Started	Project No	D	AMAI G	eologist/Ei	gineer	Driller	Driller Drilling Contractor					
Depth bg1 USCS Recobile Blow PID Descriptions made from auger cutings, unless otherwise noted (grin size, sorting, mointure, color/flue etc.)									Jaca & Sierra			
Depth bpl USCS Reco Description De	Date Star	ted	Date Con	pleted		Drilling Met	hod		Sampler type			
Depth bpl USCS Reco- Blow PID Descriptions made from augar cutings, unless otherwise noted (grain size, sorting, most size, color/hus etc.)	6/20/96		6/20/96			Tripod			2"x 24" Carbon Steel Split Spoon			
Descriptions made from auger cuttings, unless otherwise noted (ppm) Descriptions made from auger cuttings, unless otherwise noted (grain size, sorting, moisture, color/hue etc.)	Depth		Reco-	Blow	PID			Soil De				
(gain size, sorting, moisture, color/flue etc.) O	_	USCS	very	Counts	•		Description		-			
O SP O 0 0-2 ft Sand and gravel mix, poorly sorted, no visible contamination, Dry, Hue 10 YR 5/3 brown O 2-4 ft. Med sand, slightly finer than above, little or no gravel or coarse sizes No visible contamination, Dry throughout, loosely packed, Hue 5Y 4/2 Olive Gray O 4-6 ft. Sand - fine sand, little or no gravel or rock fragments, more silt than above, No visible contamination, no product odor, Dry throughout hue 5 Y 4/2 Olive gray O 6-8 ft. Sand and silt - dense sandy silt, no visible contamination, Saturated throughout, Hue chart #1 for gley 5/1 greenish gray. Drill to 11 feet and install temporary monitoring well point O 6-8 ft. Sand and silt - dense sandy silt, no visible contamination, Saturated throughout, Hue chart #1 for gley 5/1 greenish gray. Drill to 11 feet and install temporary monitoring well point O 9-11 ft dense clay observed at bottom of boring Temporary monitoring well installed, Screened interval 6-11ft Boring terminated Well Construction Details Well Construction Details Screen laterval Filter Pack Cap Type 6-11 ft No. 2 Silica sand Watertight Lock type: None Well Development Data Temp (°C) SC (µS/cm) pH Notes: SC - specific conductance Temp (°C) SC (µS/cm) pH Notes: SC - specific conductance Temp (°C) SC (µS/cm) pH Notes: SC - specific conductance No visible contamination, Dry throughout, loosely packed, Hue 5 Y 4/2 Olive gray O 4-6 ft. Med sand, slightly finer than above, little or no gravel or no gravel or no praged or nock fragments, more silt than above, No visible contamination, provided in purge water.	_	1				1						
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Well Construction Details Casing material Screen slot size O.020 inch G-11 ft No. 2 Silica sand Watertight	-		1			•						
Well Construction Details Casing material Screen slot size O.020 inch G-11 ft No. 2 Silica sand Watertight Lock type: None None Well Development Data Pate: Technique: Volume purged: Volume purged: Temp (°C) SC (μS/cm) pH Notes: SC - specific conductance nitial: 25 860 7.26 No product odor in purge water.												
Well Construction Details Casing material Screen slot size O.020 inch G-11 ft No. 2 Silica sand Watertight Lock type: None None Well Development Data Pate: Technique: Volume purged: Volume purged: Temp (°C) SC (μS/cm) pH Notes: SC - specific conductance nitial: 25 860 7.26 No product odor in purge water.						Boring terminated						
Casing material .25" X schedule 40 PVC 0.020 inch 6-11 ft No. 2 Silica sand Watertight Lock type: None None Well Development Data Pate: Technique: Volume purged: //19/96 Centrifugal pump using 5/8" high density polyethylene hose. Temp (°C) SC (µS/cm) pH Notes: SC - specific conductance nitial: 25 860 7.26 No product odor in purge water.						Soring cerminated						
Casing material .25" X schedule 40 PVC 0.020 inch 6-11 ft No. 2 Silica sand Watertight Lock type: None None Well Development Data Pate: Technique: Volume purged: //19/96 Centrifugal pump using 5/8" high density polyethylene hose. Temp (°C) SC (µS/cm) pH Notes: SC - specific conductance nitial: 25 860 7.26 No product odor in purge water.				!		Wall Con	struction	Dataile				
.25" X schedule 40 PVC	Casina mad	erial	T.	Conson all-	, aina				Con Torre			
Lock type: None None Well Development Data							- 1					
Well Development Data Well Development Data Pate: Technique: Volume purged: //19/96 Centrifugal pump using 5/8" high density polyethylene hose. 55 Gallons Temp (°C) SC (µS/cm) pH Notes: SC - specific conductance nitial: 25 860 7.26 No product odor in purge water.				0.020	inch							
Well Development Data Technique: Technique: Volume purged: 19/96 Centrifugal pump using 5/8" high density polyethylene hose. 55 Gallons Temp (°C) SC (µS/cm) pH Notes: SC - specific conductance No product odor in purge water.		stag/manh	016:									
Well Development Data						HOUS						
Technique: Volume purged: Volume purged: Volume purged: Volume purged: Volume purged: SC (µS/cm) pH Notes: SC - specific conductance nitial: 25 860 7.26 No product odor in purge water.	10163:					· · · · · · · · · · · · · · · · · · ·						
Technique: Volume purged: Volume purged: Volume purged: Volume purged: Volume purged: SC (µS/cm) pH Notes: SC - specific conductance nitial: 25 860 7.26 No product odor in purge water.						437.30 %		A Dead				
Centrifugal pump using 5/8" high density polyethylene hose. 55 Gallons Temp (°C) SC (μS/cm) pH Notes: SC - specific conductance Temp (°C) SC (μS/cm) pH Notes: SC - specific conductance						Well De	velopmei					
Temp (°C) SC (μS/cm) pH Notes: SC - specific conductance nitial: 25 860 7.26 No product odor in purge water.												
nitial: 25 860 7.26 No product odor in purge water.	//19/96											
					_							
Final: 25 840 6.99							No produ	act odor in purge	water.			
	Final:	25	<u> </u>	84	0	6.99						

611 Broadway Suite 907G

New York, New York 10012

Geologic Boring Log

									ery Oil Separator SWMU 43
Boring ID		Client:				Project:		Locat	
	43-01 Puerto Rico Sun Oil Com				ıny	RCRA Facility Investigat	ion		icoa, Puerto Rico
Project No.	•					Driller			ng Contractor
			1. Rivera			Mario Sierra			& Sierra ler type
Date Started		Date Com	pieted			Drilling Method 3 25"ID-6 00"OD-Hollow	Stem Anger		24"36" Carbon Steel Split Spoo
6/27/96	1	6/27/96	Blow	PID	·	3.23 ID-0.00 OD-110110W	Soil Descri		
Depth	TIECE	Reco-		111	l	Description made		100	less otherwise noted
bgl	USCS	very	Counts	(ppm)	1	•	ze, sorting, moisti		
(ft.)	Symbol	(per 24")	(per 6*)	21	0.24	t. Sandy clay to sand. Poo			
0	CL, SP	20	1-2-1-1	71		•	•		
	Sample o	ollected				wish brown (10YR6/4) to			
1	•					tz, mica, pyrite, shell and l			
						visible product. Immunoas			
2	SP	12	6-19-11	12		ft. Sand. Poorly sorted, l			
			68-9-11			d composed of quartz, mic			
3	Sample o					rocarbon odor and free pro			crete slab encountered
	SP	16	7-8-9-5	3		5 to 3 ft. Immunoassay san			
4						6.0 ft. Sand. Poorly sorted			
					7/N).	. Sand composed of quartz	z, mica, pyrite,	shell	and lithic fragments.
5	SP	12		40	l				
					l				
6					l				
					l				
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	1								
	<u> </u>	9			L	Call Descriptions			
	,					Soil Descriptions*			
Туре		Size (mm)		Gravel	Sym		Silt & Clay	Sym	•
	Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic
Gravel	19-75	的影響	4.8-19	little fines	GP	, , , ,	low plast.	ML	silts and very fine sand
Sand	2.0-4.8	43-2.0	.08043	some fines	GM		low plast.	CL	gravelly,sandy,silty clay
Silt & clay	翻起的	A. E. S. E.	<.08	some fines	GC	sand,clay,gravel,mix	high plast.	MH	micaceous/diatomaceous
	very loose	loose	med, dense	Sand			high plast.	СН	high plasticity clay
Soil density	100,0000			6	sw	well graded gravelly			Organic
Soil density	dense	very dens	t	no fines	3**	man grant grant,			
		very dens angular	sub angular		SP		low plast.	OL	silty clay low plasticity
Soil density Angularity	dense	_			SP	poorly graded gravelly	low plast. high plast.	OH OL	

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Geologic Boring Log

							Watery Oil Separator SWMU 43				
Boring II)	Client:			Project:		Location				
wo		Puerto F	tico Sun	Oil Co.	RCRA Facility Invest	igation	Yabucoa, Puerto Rico				
Project N	o.	AMAI G	ologist/En	gineer	Driller		Drilling Contractor				
		Néstor N	1. Rivera	ı	Constancio Olivo	Constancio Olivo Jaca & Sierra					
Date Star	ted	Date Con	pleted		Drilling Method		Sampler type				
//16/96		7/16/96			Tripod		2"x 24" Carbon Steel Split Spoon				
Depth		Reco-	Blow	PID							
bgl	USCS	very	Counts	(ppm)		Soil D	Description				
(fl.)	Symbol	(per 24")	(6" each)		· (g	rain size, sorting	, moisture, color/hue etc.)				
0	SP	18	1-2-2-3	61	0-2 ft. Sand. Poorly sorted	, loose, slight	ly moist, dark greenish gray				
Ť					(Gley 1, 3/1,10Y) to olive	grey (5Y4/2).	. Sand composed of quartz, mica,				
1	A)				pyrite, shell and lithic frag	ments varying	g in size from fine to coarse.				
-					Diesel odor and free produ						
2					·						
~											
3		(%)			2-5 ft. Borehole drilled wi	th pointer. No	sampling completed.				
-						-					
4			0								
7	[
5	SP	12	11-14	14	5-7 ft. Sand. Poorly sorted	i, loose, slight	ly moist to wet, greenish gray				
٠	"	'~	12-8	• ′	(Glev 1.5/1). Sand compos	sed of quartz.	mica, pyrite, shell and lithic				
6			12 0		fragments varying in size from fine to coarse.						
U	ļ	l <u>.</u>			Lug						
7	├──				Boring terminated.						
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	<u> </u>	1	<u></u>	<u> </u>	Well Construction	n Details	-				
			la .		· · · · · · · · · · · · · · · · · · ·	Filter Pack	Cap Type				
Casing n			Screen sl		Del 664 12131 121						
	hedule 4		0.020	inch_	2-5 ft. No. 2 Silica sand Watertight						
Security	casing/m	anbole:			Lock type:						
none					none						
Notes:											
			_		997 AV VA	A Dada					
					Well Developme						
Date:		Techniqu	ie:				sme purged:				
		Waterra		_	high density polyethylene	hose.					
	Tem	p (°C)	SC (µ	S/cm)	pH Notes:	sc - specific c	onductance				
Initial:											
Final:											

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Geologic Boring Log

									ery Oil Separator SWMU 43	
Boring ID	· · ·	Client:				Project:			Location	
43-0	2 Puerto Rico Sun Oil Compan				_	RCRA Facility Investiga	tion		Yabucoa, Puerto Rico	
Project No. AMAI Geologist/Engineer										
		Néstor M				Mario Sierra			Jaca & Sierra Sampler type	
Date Started		Date Comp	oleted			Drilling Method			Sampier type 2"x 24" Carbon Steel Split Spoot	
6/27/96		6/27/96	=: 1			Tripod	Call Dane			
Depth		Reco-	Blow	PID			Soil Desc	-		
bgl	USCS	very	Counts	(ppm)					unless otherwise noted.	
(ft.)	Symbol	(per 24")	(per 6*)				ize, sorting, moi			
0	SP	18	2-2-3-3						noist to moist, dark brown	
						R3/3) to dark gray (Gley				
1						e, shell and lithic fragmer		ı size	from fine to coarse.	
	Sample C	ollected			lmmı	inoassay sample collecte	d.			
2	SP	12	3-11-7	168						
					Sand	composed of quartz, mic	a, pyrite, she	ell and	l lithic fragments varying in	
3	Sample C	ollected				rom fine to coarse.				
-	SP	12	5-6-8	184	immı	moassay sample collecte	d.			
4	"				3.5-5	.5 ft. Sand Poorly sorted.	, loose, moist	to w	et, light grey (Gley 1, 7/N).	
7						from fine to coarse. Hydro				
5	ŀ				0100				•	
3	SP	20	5-2-3-4	6	5 5.7	5 ft Silty sand Poorly s	orted, loose.	mois	t to wet, light grey (Gley 1,	
,	Sr	20	J-2-3-4		7/81	to become (7.5VD4/2) to 1	hlack (Glevi	2.5/\	I). Sand composed of quartz,	
6					//11)	ita shall and lithic fo	namente var	vina i	n size from fine to coarse.	
89										
7	Sample (Collected				ocarbon odor. Immunoas	ssay sample c	Onec	icu.	
					Borin	ng terminated.				
8										
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	72									
						20				
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	-									
7,00					Ļ	Soil Descriptions*				
_	T	6) ()		C1	Sym	Son Descriptions	Silt & Clay	Sym		
Туре	 	Size (mm)		Gravel			Silt of Ciay	3944	Inorganic	
	Coarse	Medium	Fine	no fines	GW	well graded gravel	low start	ML	silts and very fine sand	
Gravel	19-75		4.8-19	little fines	GP	poorly graded gravel	low plast.	$\boldsymbol{\vdash}$	gravelly,sandy,silty clay	
Sand	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL		
Silt & clay	通道	Will state of the	<.08	some fines	GC	sand,clay,gravel,mix	high plast.	МН	micaceous/diatomaceous	
Soil density	very loose	loose	med, dense	Sand			high plast	СН	high plasticity clay	
	dense	very dense		no fines	sw	well graded gravelly			Organic	
Amerika - 14-				little fines	SP	poorly graded gravelly	low plast.	OL	silty clay low plasticity	
Angularity	very ang.	angular	sub angular	nme mez	1.5	Pooris Branco Brancis		_		
Angularity		angular rounded	well round	some fines		silty-sand sandy-silt	high plast.	ОН	clay med to high plasticity	
Angularity Note - density	sub round	rounded	well round	_			high plast. Peat	OH PT	clay med to high plasticity humus,swamp soils, organic	

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Geologic Boring Log

								Tracking on Separator Strike is			
Boring II)	Client:			Project:			Location			
WO	S-2	Puerto Rico Sun Oil Co.				ity Investigatio		Yabucoa, Puerto Rico			
Project N	0.	AMAI Geologist/Engineer			Driller			Drilling Contractor			
		Néstor N	M. Rivera	3	Constancio (Jaca & Sierra					
Date Star	ted	Date Con		-	Drilling Metho	Drilling Method Sampler type					
7/16/96		7/16/96			Tripod			2"x 24" Carbon Steel Split Spoon			
Depth		Reco-	Blow	PID	· · · *						
	USCS		Counts	ı			Soil Desc	rintion			
bgl				Фриц		(amin sin		isture, color/hue etc.)			
(ft.)	Symbol	(per 24")	(6" each)		70 1 1 20 4 4			Material encountered was sand,			
0											
								f quartz, mica, pyrite, shell			
1								ne to coarse. Hydrocarbon			
		ļ			odor and free pro	duct observed.					
2											
3											
4											
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	1			1	Wall Car	struction Det	ails				
<u> </u>								O #			
Casing m			Screen sl		Screen Interval	Filter P		Cap Type			
2" X scl	hedule 4	10 PVC	0.020	inch.	4-9 ft.	No. 2	Silica sand	Watertight			
Security	casing/m	anhole:			Lock type:						
none					none						
Notes:											
					Well Da	velopment Da	ıta				
<u> </u>		Tr			77 (11 1)	pareas 20	Volume	purged:			
Date:		Techniqu			£ (0) 1.1.1.3.3.3.	- a la cadha il a 1:		han Bear			
<u> </u>					5/8" high density			1			
	Tem	p (°C)	SC (µ	S/cm)	pН	Notes: SC - s	pecific con	auctance			
Initial:					<u> </u>						
Final:											